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DEMIS: AN INFORMATION SYSTEM TO SUPPORT EDUCATIONAL MANAGEMENT --ETC(U)

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DEMIS, AN INFORMATION SYSTEM TO SUPPORT EDUCATIONAL  
MANAGEMENT AND COUNSELLING ACTIVITIES.

⑨ Research reptis

⑪ Jun 76

⑫ 438 p.

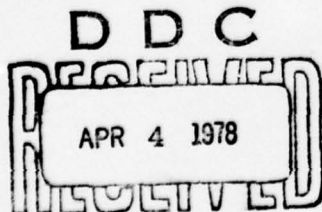
⑩ by  
Roger W. Sifrit

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Florida Technological University

June, 1976



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## PREFACE

The value of Computerized Management Information Systems (MIS) was first realized in the 1960's. Since that time numerous approaches have been developed to implement MIS. Some have failed, others have been developed as a backlash to these failures. This report traces, briefly, the history of computerized Management Information Systems, then proposes an approach for the development of a small MIS. This approach was evaluated through the development of the Department of Mathematical Sciences Information System (DEMIS) and its first operational Module, the Student Information System (SIS). The report is divided into five chapters. Chapter 1 traces the history of MIS and outlines the approach proposed for small system development. Chapter 2 discusses general information pertaining to SIS. Chapter 3 sets forth a complete yet simple set of operator instructions. Chapter 4 provides philosophy, approaches and requirements for system maintenance and modification, and Chapter 5 looks at the future of DEMIS and provides some concluding remarks.

Following the text is complete documentation on the system including the design package, a system listing, sample outputs, input card formats, configuration of maintenance and execution decks, a list of error messages with explanations and required corrective actions, and listings of file creation

and SIS cataloging decks.

I gratefully acknowledge the assistance provided by the personnel of the FTU Computer Center whose help made completion of this project possible. I am especially indebted to William H. Branch, Thomas O. Peebles, James Radford, and Bernard L. Slessinger.



## Chapter 1

### MANAGEMENT INFORMATION SYSTEMS; THEIR HISTORY AND A PROPOSED DEVELOPMENTAL APPROACH

The use of the computer as a management tool is traceable back to the mid 1950's (Mathews, 8). It was first used to reduce clerical work, with applications expanding into payroll, personnel, inventory status, cost distribution, sales analysis and similar applications. The 1960's brought about a new role for the computer, that of providing information which could help in management decision making. In this regard, however, the numerous stand-alone applications which had been developed presented a problem. Each had its own data base which duplicated information found in the other data bases. Not only was this wasteful in terms of duplicate storage of data, but data consistency problems were noted when like data items from several different data bases were examined. While inconsistencies were frequently explainable (e.g. one data base was updated daily, while another might require only monthly updating) questions nevertheless arose as to why data was maintained in more than one location. The solution to these problems was seen as developing separate but integrated data bases which would solve problems of inconsistency and duplication of data, and provide a means of integrating data for use in management oriented information

systems (MIS). The MIS required the variety of information which was then available. The software overhead required in the maintenance of integrated data bases soon led to the contemporary concepts of data base management systems which provide common data bases for a variety of applications. In the mid 1960's several factors combined to cause a tremendous increase in interest in Management Information Systems. These include the availability of integrated data bases, and the third generation computers with their increased speed and power. Management began to accept the computer and realized it's potential to provide information upon which management decisions could be made.

Unfortunately the late 1960's brought an era of unhappy experiences with MIS, many due to the "total" information concept which was not far enough along in its development to be placed into production. This concept also tended to drive an organization's information system rather than to augment and support existing (though perhaps non-automated) systems (Caruth 3:197)(the total concept is further discussed below). Management expected too much, too soon from their MIS, and the results were generally disappointing. The reaction to this experience was reevaluation of MIS theory and a tremendous proliferation of ideas in the literature.

Sherman C. Blumenthal (1) has written a classic text which classifies MIS approaches into six catagories:

1. The organizational approach establishes independent systems along organizational lines, with interaction depending on higher level coordination.
2. The data collection approach is to collect, classify and store data for some unknown future use.
3. The top down approach holds that once the information needs of top management are determined, the system necessary to supply the information can also be determined.
4. The data bank approach sets up a pool of highly detailed, unclassified data for some undetermined future use.
5. The integrated later approach is, as the name implies, a non-plan, a philosophy of continuing to develop more independent applications and "integrate them later".
6. The integrate now (or "total systems") approach, provides an "instant MIS", integrating all ADP functions at once. This is the approach which led to the reevaluation of MIS in the late 1960's.

Blumenthal then presents his own philosophy, with which I am in general agreement. He supports a "bottom up" approach combined with a systems plan. The plan can be considered from two aspects; global, which is a "plan of projects" or a framework for classifying and integrating modules, and

local, which consists of project plans or modules. Using this format, the modules are developed based on priorities, specifications, and integration considerations established by the "framework". Modules are developed to support operating level management. Their "communication" with the data bases of other modules is assured by the specifications developed in the framework. Selected data produced by the modules is copied into other data bases for use by higher level management based on Blumenthal's concept that the information required by higher level management is a subset of that produced by the lower level modules.

Blumenthal also describes the formal activities which should be accomplished in developing a system. These include:

- Proposal study,
- Problem definition, priority, and budget consideration,
- Formal written proposal,
- Initial user system organization assessment,
- Preparation of a feasibility study,
- Presentation of the feasibility study to management,
- Assignment of project responsibility, allocation of resources, delegation of a steering committee,
- Project planning and control,
- Development of functional requirements,
- Designing of system specifications,
- Programming and testing, and



Conversion and cutover.

The only exceptions to this formal procedure are those applications which are obvious minor development efforts such as "special one-time reports". Most organizations with a major data processing investment utilize the concept proposed by Blumenthal to some extent. Unfortunately, once formal procedures are established for development of a system, generally no system, no matter how small, can be developed without going through the established formal organizational procedures.

The preimplementation criteria are, in themselves, costly enough to eliminate all but major systems from consideration.

The result of this environment is that the required strong economic justification for the small application is impossible, and so small applications tend to either be dropped or to mushroom into large systems, resulting in major contracts and extended periods of time for implementation.

The purpose of this paper is to provide an alternative approach using Blumenthal's "Bottom Up" Theory, but based on the thesis that formal procedures are not always necessary (may be accomplished informally); that requirements do not have to be large enough to justify major investments of time and resources; and that an organization's information requirements can evolve in an open ended plan, based on existing information resources.

This project considers the management information re-



quirements for one department of a college located at a large university. The information requirements were very real, yet probably not economically justifiable as a large project. Previous attempts to design information systems for other colleges in the university had either failed or their planning had dragged on over an extended period of time without realization of an operational system. The length of time to implement the system, the inability to support or maintain it, or the lack of a systemic approach to building a system to meet all information requirements resulted in a general loss of interest and the failure of these systems to produce satisfactory results.

The system described by this project was developed with a different approach, which is characterized by informal, though systematic, development, and includes a generalized MIS framework, which is flexible and open ended, and the first module of the system. The scenario for this approach was:

1. The users were contacted to determine what immediate information requirements existed, and the general nature of possible future additions to the system.
2. Personnel of the computer center were contacted to determine the type of information that was available in existing data bases to support a system such as the users felt they needed.

3. The users were again contacted and their requirements reappraised to make the maximum use of available data, and then the minimum additional data requirements were agreed upon.
4. A major system was conceptionalized which could contain a number of interrelated sub-systems.
5. The subsystem to support the immediate requirements was designed, coded, and implemented.

The system uses top down, structured, modular design and programming for ease of maintenance, and was designed so that it can be run using existing equipment and personnel resources.

User interest and enthusiasm in the project has been maintained at high level. This is attributable to several factors. The information supplied to the users was information they needed and in the required format. The time for development of the system was less than six months, during which the users received frequent, informal feedback on the status of the project. No elaborate justification for the project was required of the users, and rather than enlarging their requirements to justify the project, they were able to reduce requirements to the essential data that was needed. The result of the latter was that the system was able to operate using existing personnel and equipment resources which meant that the users did not have to divert

funds from other projects to pay for this system.

I feel that this concept of ADP support offers a responsive alternative to organizations which have MIS formal planning and design criteria, and where:

- a) the information requirements are valid,
- b) the information requirements are such that a large expenditure of time and money is not immediately justifiable, and
- c) most of the required information is already available in existing data bases.

## Chapter 2

### SYSTEM IMPLEMENTATION

#### GENERAL INFORMATION ON DEMIS / SIS

In keeping with the approach described in Chapter 1, a flexible, open ended framework was developed for the Department of Mathematical Sciences Information System (DEMIS). This framework is graphically illustrated in figure 1. No detailed specifications were made for the proposed modules of DEMIS, as this would detract from the flexibility of the system. Generalized contents of the modules are, however, discussed in concept in Chapter 5.

The Student Information System (SIS) is the first module of DEMIS to be implemented, and is designed to provide information to support management and counselling activities of the Department. SIS has been constructed using contemporary concepts of modular, top down, structured design, and structured programming techniques. It has also been designed to require minimum operator time, training, and skill, as well as minimum maintenance.

SIS provides useful, required, up to date information for the Department of Mathematical Sciences. It establishes a flexible, expandable student data base and a student enrollment statistical data base to be used by DEMIS. It also provides an interface for receiving data elements from the FTU

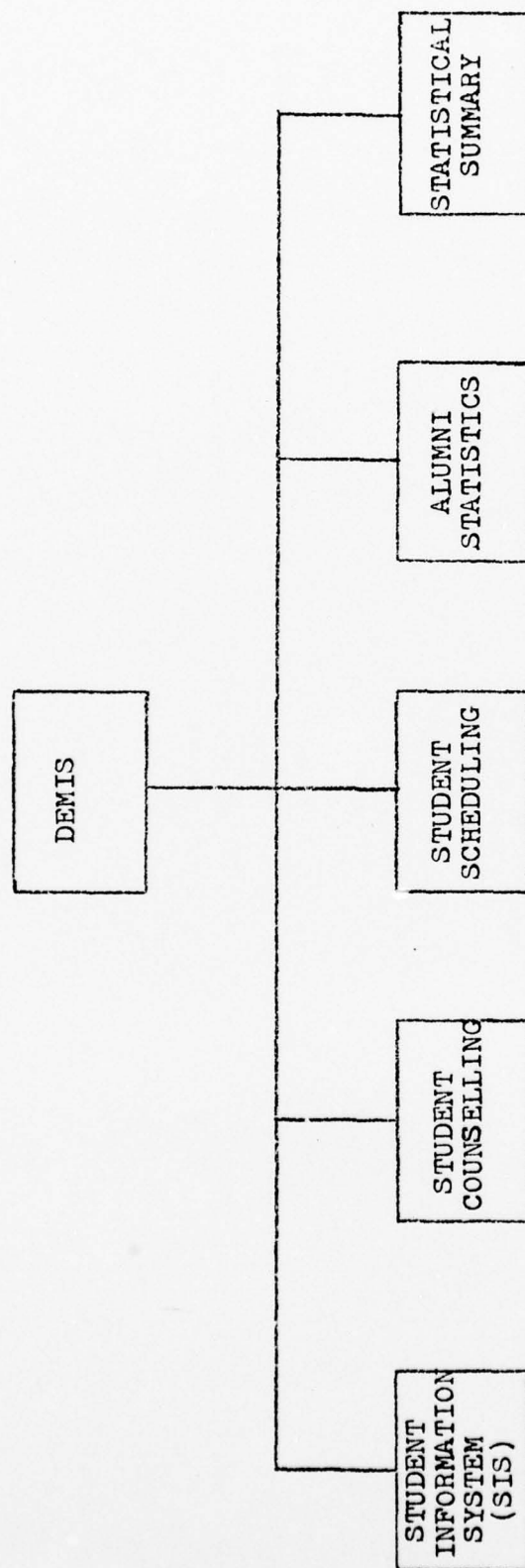


FIGURE 1

DEMIS FRAMEWORK



## Student Record Data Base.

### SIS BACKGROUND

With the continuing growth of student enrollment in the Department of Mathematical Sciences, it has become more and more apparent that certain required administrative information pertaining to student enrollment is not readily available, or, at least, not available in the required format. As a result, frequent time consuming searches through file cabinets containing student records, or through the numerous available computer printouts, is necessary to assemble the required data. Some of the more pressing information requirements are determining the number of students majoring in the various programs offered by the Department of Mathematical Sciences; determining the number and names of students who are in Post Baccalaureate Status so their progress toward achieving provisional or regular status may be periodically reviewed; providing faculty advisors with immediate background data on students whom they advise as well as data concerning their overall progress. Often, various faculty advisor listings must also be manually modified and up dated.

These problems indicated a need for an information system within the Department. DEMIS was developed to supply this information.

## SYSTEM SPECIFICATIONS FOR SIS

In order to meet the requirements stated above, the following specifications were developed of SIS (the first module of DEMIS).

1. Outputs of the system will include:
  - A. A roster of students currently enrolled ordered by major, level of study (undergraduate, post baccalaureate, or graduate) and alphabetical by name (figure 2).
  - B. A roster of students ordered by faculty advisor (figure 3).
  - C. Listing of student-faculty advisor assignments (figure 4).
  - D. Listing of the students advised by each faculty member (figure 5).
  - E. A statistical printout which shows student enrollment at quarter intervals (figure 6).
2. The system should be designed so that it can be operated by clerical personnel in the department.
3. Complete documentation is required for maintenance and modification and to facilitate the addition of other modules to DEMIS.
4. Data maintained in a Mathematics Department Data Base should be minimal, with the greatest portion

DEPARTMENT OF MATHEMATICAL SCIENCES  
GRADUATE COMPUTER SCIENCE MAJORS

MAY 26 1976

RAYFP	ADDRESS: JOHN DENVER	777 77 7777 G-COMP	70F/3.888 ADVISOR: DR C L SMITH	SFX: M	MARITAL ST: M	GR: N
	PARENT: FTU/STATUS:		LOCAL TEL:			
ROSEN	ADDRESS: SAVUUL	ARR MP ARRR	G-COMP 70F/3.995 ADVISOR: DR C L SMITH	SFX: M	MARITAL ST: M	GR: N
	PARENT: SFD 999	ORLANDO	FL 32456 LOCAL TEL: 305 666 8745			
	QTRS ATTENDED FTU/STATUS:	ORLANDO	FL 32456			

FIGURE 2

STUDENT ROSTER BY MAJOR / LEVEL OF STUDY

DEPARTMENT OF MATHEMATICAL SCIENCES  
FACULTY ADVISOR EXTRACT OF STUDENT ROSTER

MAY 26 1976

RAFTER	JIMMY RUD	777 RR 9999	P-COMP 70S/3.985	ADVISOR: DR A C BROWN	SEX: M	MARITAL ST:S	GR:N
ADDRESS:	REF 1	RUS STOP	FL 22233	LOCAL TEL: 305 666 9874	MEMBR:		
PARENT:	14 PARENT ROAD	CHICAGO	TL 32564				
QTRS ATTENDED	FTU/STATUS:						
CONROY	MARY ELLEN	666 77 8888	P-COMP 70S/3.999	ADVISOR: DR A C BROWN	SEX: F	MARITAL ST:S	GR:N
ADDRESS:	112 JAMES STREET	ORLANDO	FL 55542	LOCAL TEL: 305 668 9638	MEMBR:		
PARENT:	112 JAMES STREET	ORLANDO					
QTRS ATTENDED	FTU/STATUS:						
LEU	LEE SHU	555 66 7777	P-MATH 70S/2.999	ADVISOR: DR A C BROWN	SEX: M	MARITAL ST:S	GR:N
ADDRESS:	PARENT:	LOCAL TEL:			MEMBR:	SPCA*ACM	
QTRS ATTENDED	FTU/STATUS:						
SHOEMACHER	WILLIAM R	444 55 6666	P-MATH 70S/3.885	ADVISOR: DR A C BROWN	SEX: M	MARITAL ST:M	GR:N
ADDRESS:	PARENT:	LOCAL TEL:			MEMBR:		
QTRS ATTENDED	FTU/STATUS:						

FIGURE 3

STUDENT ROSTER BY FACULTY ADVISOR

DEPARTMENT OF MATHEMATICAL SCIENCES  
FACULTY ADVISOR LISTING  
GRADUATE MATHEMATICAL SCIENCE MAJORS  
MAY 26 1976

STUDENT		FACULTY ADVISOR
JONES	JOHN P	DR JONES
JORGENSEN	OSCAR	DR R DUTTON
WASHINGTON	GEORGE C	

FIGURE 4

STUDENT-FACULTY ADVISOR LISTING



DEPARTMENT OF MATHEMATICAL SCIENCES

MAY 26 1976

THE FOLLOWING NAMED STUDENTS ARE ADVISEES OF DR A C BROWN

BAXTER	JIMMY BUD
CONROY	MARY ELLEN
LEU	LEE SHU
SHOEMACHER	WILLIAM R

FIGURE 5

LISTING OF STUDENTS ADVISED BY EACH FACULTY MEMBER

DEPARTMENT OF MATHEMATICAL SCIENCES

STUDENT ENROLLMENT

MAY 26 1976

711

	COMP	MATH	STAT	TOTAL
UNDERGRADUATE	3	0	3	6
GRADUATE	2	3		5
POST BAC	3	3		6
TOTAL	8	6	3	17

704

	COMP	MATH	STAT	TOTAL
UNDERGRADUATE	3	0	3	6
GRADUATE	2	3		5
POST BAC	3	3		6
TOTAL	8	6	3	17

703

	COMP	MATH	STAT	TOTAL
UNDERGRADUATE	1	1	3	5
GRADUATE	3	3		6
POST BAC	3	3		6
TOTAL	7	7	3	17

FIGURE 6

STUDENT ENROLLMENT REPORT

694

	COMP	MATH	STAT	TOTAL
UNDERGRADUATE	1	1	3	5
GRADUATE	3	3		6
POST BAC	2	3		5
TOTAL	6	7	3	16

692

	COMP	MATH	STAT	TOTAL
UNDERGRADUATE	3	0	3	6
GRADUATE	3	3		6
POST BAC	1	3		4
TOTAL	7	6	3	16

of required data extracted from the FTU Student Records.

5. The system must operate on the CFRDC facilities.

#### SIS CONCEPT

SIS can be described in terms of three general (somewhat simplified) processes as shown in figure 7. These are: update the MATH-DATA-BASE file; load the SPIN-OFF file; and generate reports.

The MATH-DATA-BASE file is one of two data bases maintained by the Department of Mathematical Sciences (the other is the STAT-HIST file which is discussed below). This data base contains four data fields for each student record; faculty advisor name and SSN (Social Security Number), student attendance/status data, student association membership data, and the student SSN which is used to key the student MATH-DATA-BASE record to the FTU Student Record. Additions, changes, and deletions to this data base are made using punched cards. The latter are read into a temporary MATH-CHANGE file where they are sorted and then merged with the MATH-DATA-BASE into a temporary MATH-REORG file. This is then read back into the MATH-DATA-BASE.

The temporary SPIN-OFF file is loaded with selected data fields from FTU records of all students with majors of COMP,

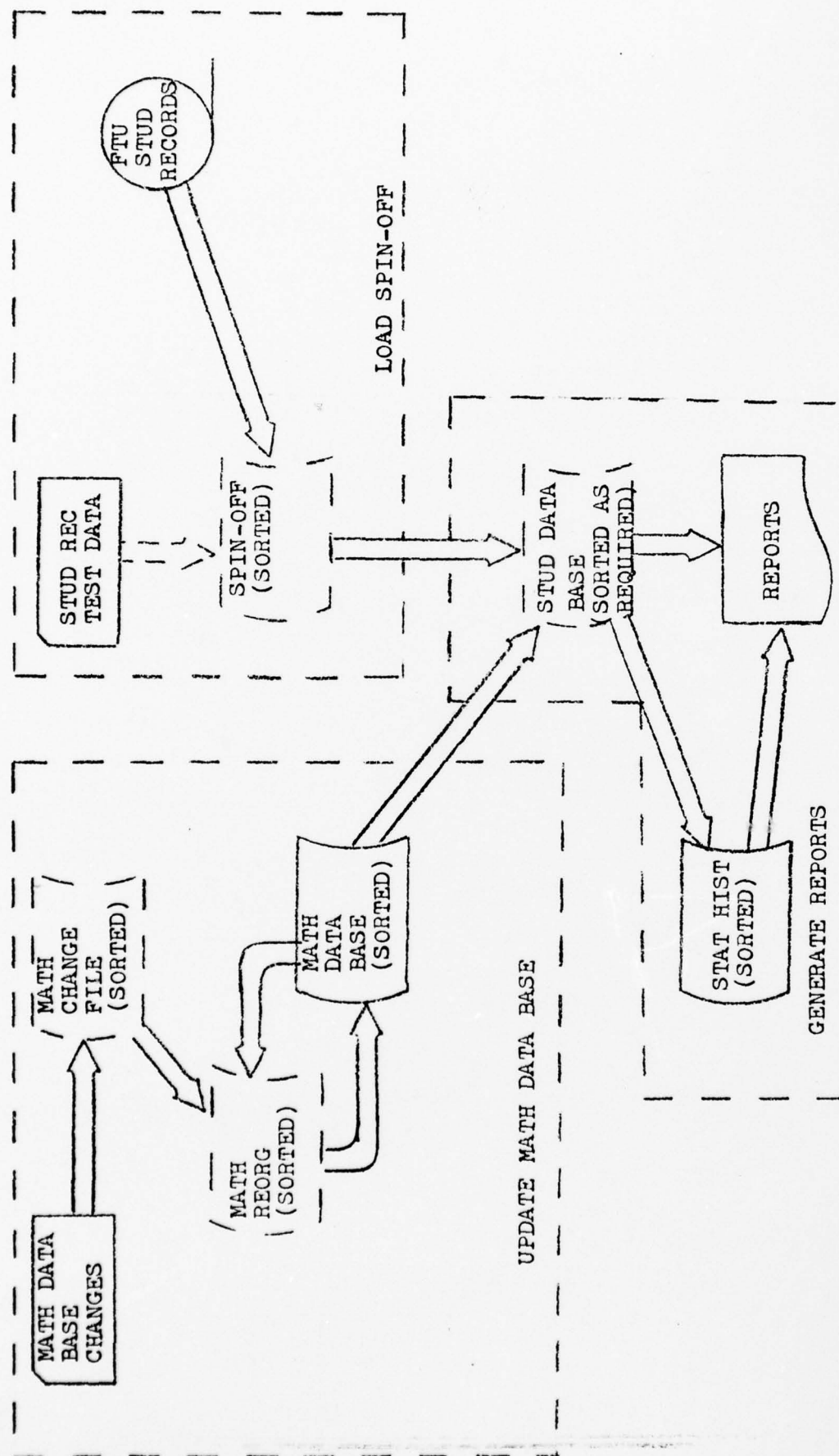


FIGURE 7  
SIS OVERVIEW DIAGRAM

MATH, or STAT (an alternate method for loading SPIN-OFF with test data is also provided). Whenever SIS is run, it retrieves the SPIN-OFF file records and uses the data to construct a temporary STUD-DATA-BASE file.

When a report is requested, the records from the MATH-DATA-BASE are merged into the STUD-DATA-BASE, which is then sorted on various combinations of keys to provide the requested reports. Whenever a statistics report is requested, a new set of current student enrollment statistics is compiled and added to the STAT-HIST file before the report is generated.

#### SIS SYSTEM DESIGN

The System design was developed and implemented through use of IBM's Hierarchy plus Input Process Output (HIPO) technique for system design. This involves the use of system specifications (already discussed), a hierarchical Visual Table of Contents (VTOC) (figure 8), and corresponding Input-Process-Output diagrams (appendix D).

The result of this design process is a modular, structured system design, as indicated in the VTOC. Each module is "called" by it's higher module and, in turn, calls its lower modules. This approach has greatly simplified the design process. It also facilitates maintenance and changes because the appropriate module can be quickly located, and usually any changes made to it will only affect its "parent" and



Department of Mathematics  
Information System  
DEMIS 1.0

Provide student  
information  
SIS 2.0

Maintain Math  
Dept data base  
MATH-LOAD-UPDATE 2.1

Load FTU  
student data  
LOAD-FTU-DATA 2.2

Generate stu-  
dent reports  
GENERATE-REPORTS 2.

Create new Math  
Dept record  
CREATE-MATH-REC 2.1.1

Update Math Dept  
data base record  
UPDATE-MATH-REC 2.1.2

Maintain statistics  
history file  
STAT-HIST 2.1.3

Capture FTU data  
on spin-off file  
GET-SPIN-OFF 2.2.1

Manually load FTU  
data on spin-off file  
LOAD-SPIN-OFF 2.2.2

Load STUD-DATA-BASE  
from SPIN-OFF  
LOAD-STUD-DB 2.2.3

Merge FTU and  
data  
MERGE-DATA 2

Compute and pr  
student stat  
PRINT-STAT 2

Print stud  
reports  
PRINT-REPT 2

FIGURE 8

HIPO VISUAL TABLE OF CONTENTS (VTOC)



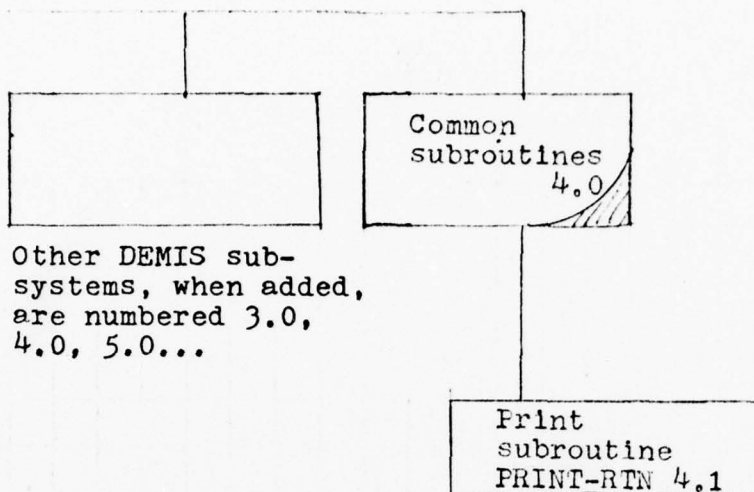
# HIPO WORKSHEET

GX20-1970-0 U/M 025\*  
Printed in U.S.A.

Author: ROGER SIFRIT System/Program: DEMIS Date: 3/6/76 Page: 1 of 1  
Diagram ID: \_\_\_\_\_ Name: VISUAL TABLE OF CONTENTS Description: DEPT OF MATH SCI INFO SYSTEM

Department of Mathematics  
Information System

1.0



Other DEMIS sub-systems, when added, are numbered 3.0, 4.0, 5.0...

Generate student reports  
GENERATE-REPORTS 2.3

Merge FTU and math data  
MERGE-DATA 2.3.1

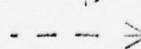
Compute and print student stat  
PRINT-STAT 2.3.2

Print student reports  
PRINT-REPT 2.3.3

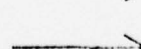
## LEGEND



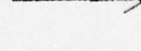
Data Movement



Control Flow



Data Reference



Pointer



name  
subroutine  
ID

Subroutine is executed and control returns to next step.

2

"offspring" modules.

The Input-Process-Output diagrams, one of which is provided for, and keyed to , each module in the VTOC, visually and naratively describe the logic, the required inputs, and the outputs produced by each module. The coding was produced so that each module is implemented in a "section" of code which can quickly be identified for maintenance purposes.

Every attempt has been made to use corresponding terms in the VTOC, the Input-Process-Output diagrams, and in the coding.

Close coordination has been made with personnel at the FTU Computer Center, to ensure the compatibility of DEMIS with the FTU Student Records System and to facilitate the use of student record data by DEMIS.

#### SIS FILE DESIGN

The files used by SIS include two permanent files, five temporary files, and a variety of utility sort files. The two permanent files were established to store Mathematics Department unique data (MATH-DEPT-STUD-DB) and student enrollment data (STAT-HIST-DB).

Prior to running SIS a temporary file, SPIN-OFF, must be loaded with certain data from the FTU Student Records (figure 9). This data is placed in a temporary STUD-DATABASE file. The MATH-DEPT-STUD-DB is then merged into the

2LAST-NAME	PIC X(18).
2FRST-MDLE-NAME	PIC X(30).
2SSN	PIC 9(09).
2APPL-TYPE	PIC 9(01).
2MAJOR-1	PIC 9(04).
2FTU-SUMMARY.	
2FTU-LAST-QTR	PIC 9(03).
2FTU-GPA	PIC 9V999.
2SEX	PIC X(01).
2INDX	PIC X(200).
* 2GRD-IND	PIC X(01).
* 2START-SUB	PIC X(02).
* 2END-SUB	PIC X(02).
2HOME-STREET	PIC X(20).
2HOME-CITY	PIC X(20).
2HOME-STATE	PIC X(02).
2HOME-ZIP	PIC 9(05).
2HOME-PHONE	PIC X(10).
2KIN-STREET	PIC X(20).
2KIN-CITY	PIC X(20).
2KIN-STATE	PIC X(02).
2KIN-ZIP	PIC 9(05).
2MARITAL-STATUS	PIC 9(01).

NOTE: DATA REQUIRED FOR ALL STUDENTS EVER ENROLLED IN FTU

WITH MAJOR CODE OF 0701, 1701, 1702, OR 1790

FIGURE 9  
SPIN-OFF INPUT FROM FTU STUDENT RECORDS

STUD-DATA-BASE, to provide for generation of the required reports. Each time new enrollment statistics are generated, they are added to the STAT-HIST-DB to provide a continuous record of enrollment data.

All files used by SIS are sequential. The decision to use sequential files was made based on consideration of the following factors:

- a) it is anticipated that large volumes of data will be processed,
- b) data from the FTU Student Record Data Base will be sorted in sequence of SSN,
- c) conversion from disk to tape, if required, will be facilitated,
- d) data must be repeatedly sorted on different keys to produce the required outputs,
- e) MATH-DEPT-STUD-DB is stored sequentially by SSN, so that change data can be placed on a file, sorted on SSN, then merged with the MATH-DEPT-STUD-DB, and
- f) numerous and frequent changes to the SIS data bases are anticipated which makes other types of files (e.g. ISAM) inefficient.

#### SIS CODING

DEMIS was coded using COBOL, primarily to facilitate



interfacing with the FTU Student Record System which also uses COBOL. The coding has followed the logic of the HIPO system design, but, of course, is in more detail and includes numerous error checking routines (appendix A) which are not reflected in the HIPO design package. In other cases, where some of the higher level language characteristics of COBOL result in instructions which accomplish a variety of actions, the HIPO diagrams might be more detailed than the coding.

Every effort has been made to use the self-documenting characteristics of COBOL. Storage areas, variables, file names, paragraph names, and section names are written in a descriptive way, providing hopefully meaningful mnemonic names.

Every effort has also been made to provide easy to understand logic flow throughout the program. This, coupled with the program modularity, should facilitate reading of the code. Wherever possible, coding has been designed for clarity, even at the expense of efficiency. Package routines and other features are used wherever possible (e.g. COBOL sort-merge feature and string option).

## Chapter 3

### USER PROCEDURES FOR SIS

#### GENERAL

SIS has been designed to require minimum operator training and involvement. It provides a relatively foolproof system providing the procedures listed below are followed.

Many errors in keypunching and out of sequence card input will be detected by SIS and a warning message provided. Some errors, however, cannot be detected by the system (e.g. SSN or spelling of name, address, etc.). Critical data should be double checked by the keypunch operator. Of particular importance is SSN because it is used as the key to locate and update records in most of the files.

All reports can be obtained without complete MATH-DEPT-STUD-DB records. Report formats which are keyed to advisor SSN will, however, be affected by the absence of faculty advisor data (this is further explained below).

#### MAINTAINING THE MATH-DATA-BASE

The primary task of operating SIS is the maintenance of the MATH-DEPT-STUD-DB. All other data is automatically computed (i.e. statistics) or is provided from the FTU Student Record Data Base.

Changes to the MATH-DEPT-STUD-DB refer to introducing

data into a student record, changing or deleting data in a record, or deleting an entire student record. These changes are accomplished by key punching and inputting cards in the appropriate format (figure 10). When this data is entered into the computer, a search will be made using SSN as a key, to see if a record exists for that particular student. If one does exist, it will be updated. If no record exists, a new record will be created using whatever data is submitted.

There are three data items, in addition to SSN, which must be maintained for each student; faculty advisor (name and SSN), quarters attended FTU and status, and association memberships. The latter two items are for information only (i.e. not used as sort keys) and their absence will in no way affect the operation of SIS (other than blank fields on the printouts). Incomplete faculty advisor data, however, will change the output formats because several reports are keyed to the advisor SSN. All students without an assigned faculty advisor are grouped together as having no assigned advisor.

Building the MATH-DEPT-STUD-DB will be a time consuming process and it is recommended that the data be phased in starting with faculty advisor input.

Sequencing of MATH-DEPT-STUD-DB card changes is immaterial. They are sorted by SIS before any records are updated. There is no need, for example, to place two changes pertaining to the same student physically together in the group of MATH-DEPT-STUD-DB changes.





## RUNNING SIS

The following conditions must be met before output can be obtained from SIS.

1. The SPIN-OFF file must be created from the FTU Student Records.
2. The MATH-DEPT-STUD-DB file must have been created.
3. The STAT-HIST file must have been created.
4. SIS must be catalogued.
5. The execution deck must be loaded.

The SPIN-OFF file is created by the FTU Computer Center. This should be accomplished as soon as possible after the start of each academic quarter, once the INDEX field of all FTU student records has been updated. It will normally require several days notice for personnel at the center to create this file.

The MATH-DEPT-STUD-DB file is permanently stored. However, should the file be destroyed, it must be regenerated before SIS will work. To accomplish this, load DECK #3 (appendix E) into the card reader and verify the creation and cataloging of the file from the printed listing. This will recreate the MATH-DATA-BASE file without student data. Reloading student data is accomplished by rerunning all previously run changes to the data base, in the same sequence in which they were originally run, with each data deck separated



by a card with an '\*' in column #1 (see figure 11). The effect of this procedure is to recreate the data base exactly as it had been previously built. The old change cards must, therefore, be saved and kept in a secure location. They form a data backup for use in case the MATH-DEPT-STUD-DB is damaged or destroyed.

The STAT-HIST file, like the MATH-DEPT-STUD-DB, is a permanent file. If it should be destroyed DECK #4 (appendix E) must be loaded to recreate the file (without data). To reload the data into the file there are two alternate procedures. The first is to recreate the history data as discussed in "Creation of STAT-HIST Data Base" below. The second is to take the most recent printout and use the information there to complete an 'H' card (figure 12) for each quarter in which data is available. The latter procedure is probably the best approach, and will provide a permanent backup deck. The backup deck may then be loaded with the next SIS run.

SIS is permanently catalogued on the CFRDC system, however should it be destroyed, it may be recatalogued by loading DECK # 2 (appendix C).

The execution deck consists of several items (figure 13), which must be in proper sequence. DECK #1 contains the instructions which call SIS to execute the program. This must be immediately followed by a 'Y' card (figure 14). This

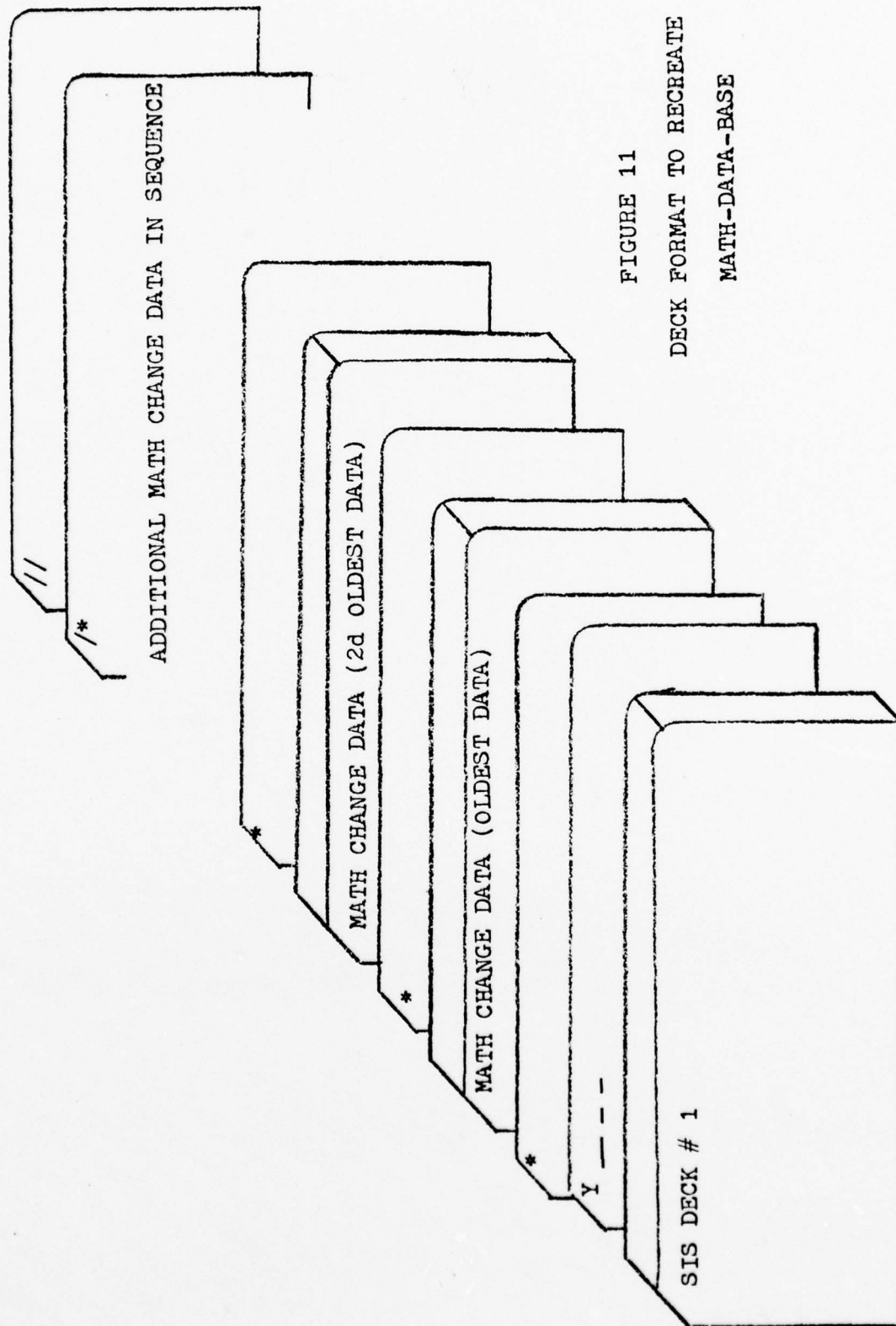


FIGURE 11  
DECK FORMAT TO RECREATE  
MATH-DATA-BASE

**NOTE: DO NOT USE THIS FORM WHEN ORDERING NEW OR REVISED CARD FORM COMPOSITION.**

**INTERNATIONAL BUSINESS MACHINES CORPORATION**  
**INFORMATION RECORDS DIVISION**  
**MULTIPLE-CARD LAYOUT FORM**

Form X24-6599-1  
15M H47090  
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Company

# SIS 'H' FORMAT

by

ROGER W. SIFRIT

Date \_\_\_\_\_

3/6/76

Job No.

Sheet No.

## ALTER STAT - HIST DATABASE - 'H' FORMAT

[illegible]

CURRENT & TR CODE	H
----------------------	---

COMP-UG	COMP-GR	COMP-PB	MATH-UG	MATH-GR	MATH-PB	STAT-UG
---------	---------	---------	---------	---------	---------	---------

--

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

- NOTES: 1. COLUMNS 2 THROUGH 32 MUST EACH CONTAIN A DIGIT Ø THROUGH 9.  
2. CURRENT QTR CODE IS THE QUARTER FOR WHICH THE STATISTICAL DATA IS TO BE CHANGED. USE DATA FOUND IN APPENDIX B.

[illegible][illegible][illegible]

FIGURE 12

STAT-HIST CARD INPUT FORMAT

32

[illegible]

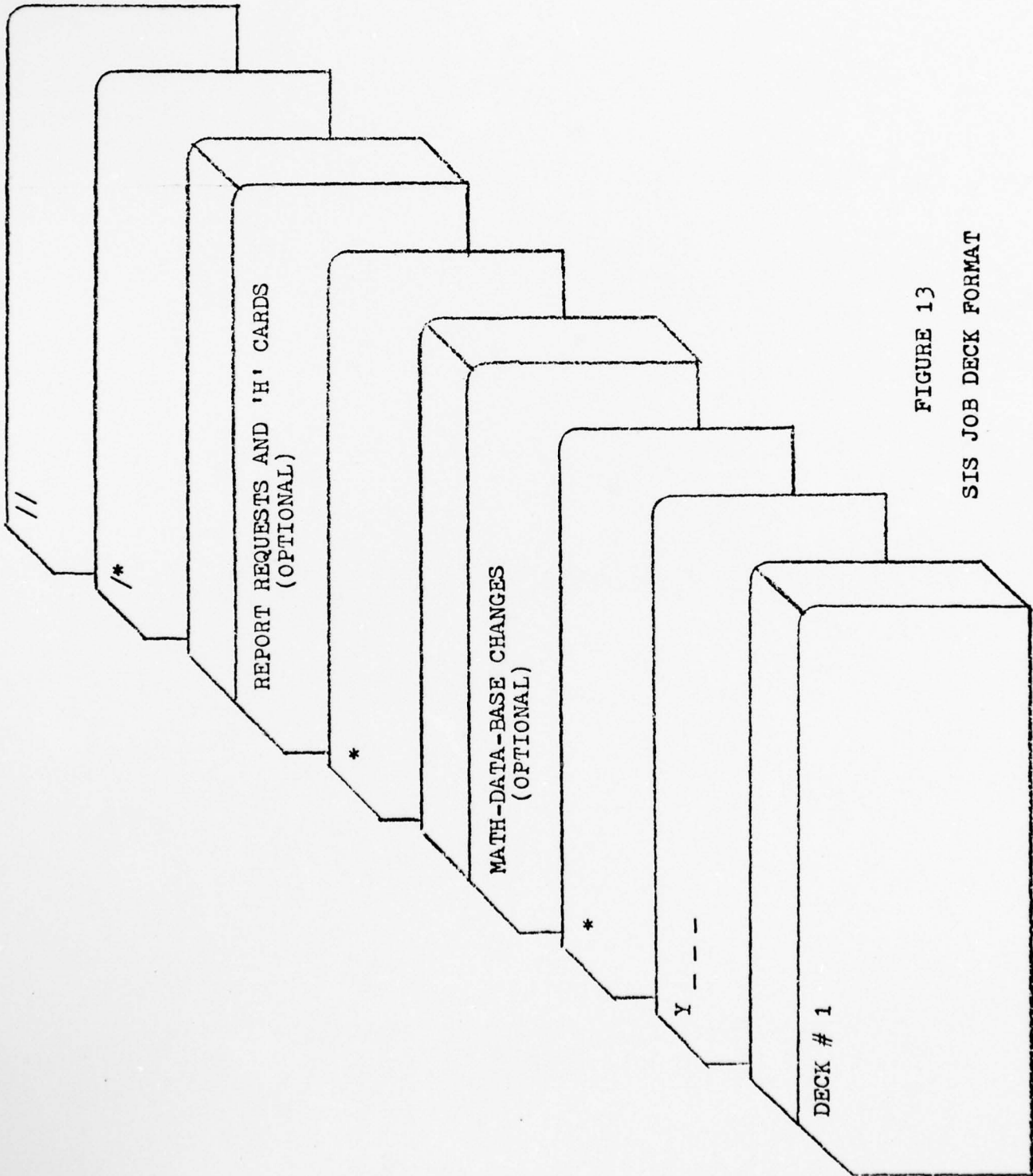


FIGURE 13  
SIS JOB DECK FORMAT

NOTE: DO NOT USE THIS FORM  
WHEN ORDERING NEW OR REVISED  
CARD FORM COMPOSITION.

IBM

INTERNATIONAL BUSINESS MACHINES CORPORATION

INFORMATION RECORDS DIVISION  
MULTIPLE-CARD LAYOUT FORM

Form X24-6599-1  
IBM 447090  
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Company \_\_\_\_\_ by SIS 'Y' FORMAT Roger W. Sifrit Date 3/6/76 Job No. \_\_\_\_\_ Sheet No. \_\_\_\_\_

YEAR AND QUARTER - 'Y' FORMAT

CURRENT QUARTER ENTRY FROM APPENDIX B

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

FIGURE 14  
YEAR - QUARTER 'Y' CARD INPUT FORMAT

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80



card supplies SIS with the present academic year and quarter. Based on this information a search of student records pertaining to that quarter is made. Failure to enter a 'Y' card will cause an immediate termination of the program. Use of incorrect data on this card will cause the wrong data to be searched in the student records, with undeterminable results. The 'Y' card contains four characters. The first character is the letter 'Y'. This is followed by three numbers representing the current fiscal quarter (appendix B). A card with an '\*' in column 1 must follow the 'Y' card. Failure to enter an '\*' will cause the first MATH-DEPT-STUD-DB change card to be ignored, and a message to this effect will be printed (appendix A). It may also cause damage to the SPIN-OFF file. The next items in the deck are the MATH-DEPT-STUD-DB changes. They may be in any sequence. The system will sort them prior to posting changes to the MATH-DEPT-STUD-DB records (changes are optional when SIS runs). An '\*' must follow the changes. Report requests (figure 15) follow, and may be run in any sequence (report requests are optional).

#### CREATION OF STAT-HIST DATA BASE

The 'Y' card, as mentioned above, indicates to SIS which quarter is to be searched in the SPIN-OFF file (FTU Student Data) to determine current enrollment and statistical data.

NOTE: DO NOT USE THIS FORM  
WHEN ORDERING NEW OR REVISED  
CARD FORM COMPOSITION.



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**MULTIPLE-CARD LAYOUT FORM**

Form X24-6599-1  
IBM H47090  
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Company \_\_\_\_\_ Application SIS REPORT REQUESTS by ROGER W. SIFRIT Date 3/6/76 Job No. \_\_\_\_\_ Sheet No. \_\_\_\_\_

**REQUEST FOR STUDENT DATA ROSTER - 'R' FORMAT**

R  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

**FACULTY ADVISOR LIST - 'F' FORMAT**

F  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

**ADVISEE LIST - 'A' FORMAT**

A  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

**CURRENT STUDENT ENROLLMENT STATISTICS - 'C' FORMAT**

C  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

**FIGURE 15**  
**REPORT REQUEST CARD FORMATS**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

To access data from previous quarters, the 'Y' card must indicate the quarter for which data is to be collected. Therefore, to build the STAT-HIST-DB file, successive runs of SIS must be made, starting with the first quarter (691) up to the current quarter. The quarters are listed in appendix B. This data is automatically stored in the STAT-HIST-DB file and printed with each 'C' report request.

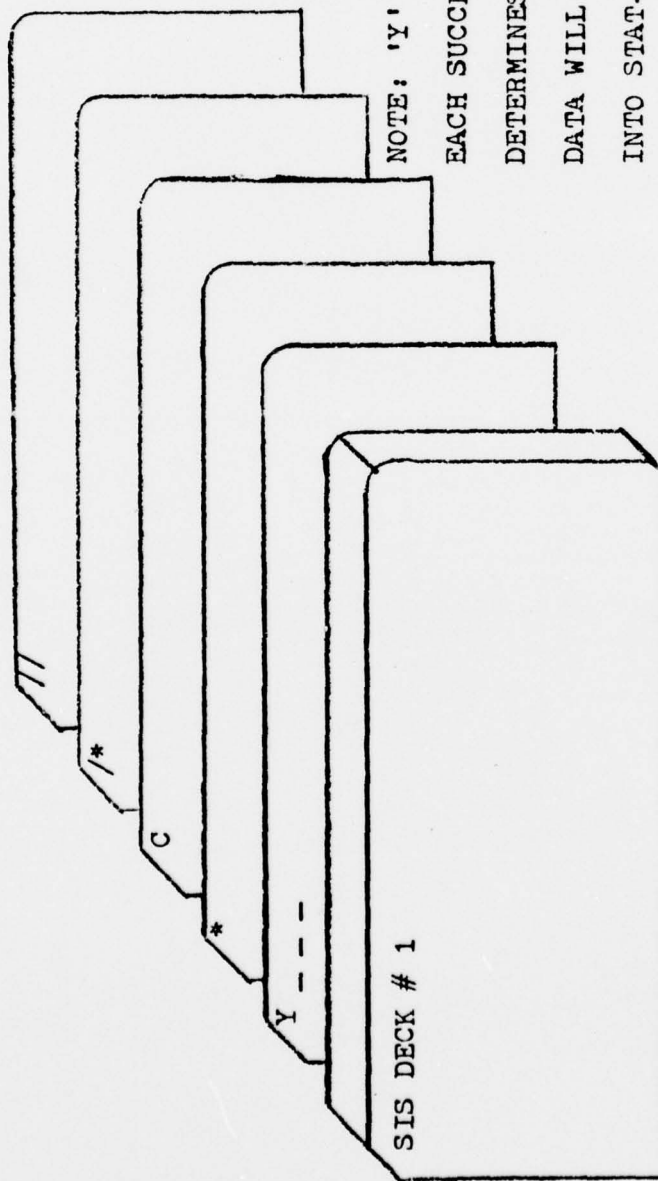
The data deck required to build the STAT-HIST-DB is shown in figure 16.

#### CHANGING / DELETING DATA FROM THE STAT-HIST DATA BASE

Statistical data stored in the STAT-HIST-DB file may be altered or deleted by using an 'H' format card (figure 12). To add new data, complete the card, as shown in figure 12, with an 'H' in column 1 and numeric data (0-9) completely filling columns 2 through 32. Failure to enter data as required will cause the 'H' card to be disregarded by SIS. To delete an entry from STAT-HIST-DB file, enter the date which is to be deleted, then fill columns 8 through 32 with '0's.

#### REPORT FORMATS

Report formats are shown in figures 2 through 6. The student enrollment report (figure 6) will display all history data in the STAT-HIST-DB file, with the most recent



NOTE: 'Y' CARD MUST BE CHANGED ON EACH SUCCESSIVE RUN. THE 'Y' CARD DETERMINES THE QUARTER FOR WHICH DATA WILL BE COMPUTED AND ENTERED INTO STAT-HIST-DB.

FIGURE 16  
DECK FORMAT TO BUILD  
STAT-HIST-DB

statistics displayed first. A new entry will be made to the STAT-HIST-DB file every time a 'C' report (figure 15) is requested. If an entry already exists in the file for the quarter indicated on the 'Y' card, the new data which is generated will update the existing entry.

The 'R' report produces two sets of reports (figure 2 and 3): a roster of students currently enrolled by major and level of study, and the same data grouped by faculty advisor.

The 'A' report (figure 5) provides one listing for each faculty advisor showing the students he advises. Those students who are not assigned an advisor will appear on one listing, and new / temporary advisor names may be manually entered on the printout.

The 'F' report (figure 4) produces a student-faculty advisor listing by major and level of study.

#### ERROR MESSAGES

SIS incorporates a number of error checking routines. When an error is detected, a message is printed out to advise the user of the problem, what action SIS has taken, and in some instances what further action the user should take. Once the error message is printed, SIS continues to execute if at all possible. It is, therefore, essential that each output produced by SIS be reviewed and, if error messages occurred,



corrective action should be taken by the user. To this end a complete list of SIS generated messages, along with appropriate user responses, appears in appendix A.

## Chapter 4

### MAINTENANCE OF SIS

#### GENERAL

Problems arising from SIS operation should be easy to isolate and correct using the documentation provided with this package. This documentation includes the HIPO package (figure 8, appendix D) and a listing of SIS. Other figures found in this report should also be of use in the maintenance of SIS.

SIS has been designed in a modular fashion in the anticipation that additional DEMIS modules will be designed to interact with SIS to perform other functions. Expansion of the MATH-DEPT-STUD-DB, provided that it is accompanied by an identical expansion of the associated sort file, will not affect the operation of SIS. All data transfers, to and from the data base, use the COBOL MOVE CORRESPONDING option. This option has been used so that the locations of the corresponding fields within the sending and receiving records is not critical. This principle holds true for modifications in the SPIN-OFF data received from the FTU Student Records.

For testing purposes, SIS incorporates a procedure for loading the SPIN - OFF file using card input test data. This data is designed to be input in card form using the format

described in figure 17. This data is provided as DECK # 5 for future use and when used should follow the input sequence shown in figure 18. Should additional FTU Student Record data be required by SIS or new DEMIS subsystems, it may be simulated, for test purposes, by defining additional card input formats, adding additional fields to the description of the SPIN-OFF file and its associated sort file, and making appropriate changes to the LOAD-FTU-DATA section.

Should additional MATH-DEPT-STUD-DB fields be required, new card input formats must be defined and additional fields added to the MATH-DEPT-STUD-DB, its associated sort file, and the MATH-CHANGE file. The program sections which process the MATH-DEPT-STUD-DB must also be appropriately modified.

#### SIS - FTU STUDENT RECORD INTERFACE

A SPIN-OFF file has been temporarily created to contain extracts of the FTU Student Records on all students whose major is COMP, MATH, or STAT. Once this data has been loaded into the SPIN-OFF file by the personnel of the FTU Computer Center, it is available for use by SIS.

The format and data required for the SPIN-OFF file is as shown on the SIS listing (appendix C) as the SPIN-OFF-FD data record. The fields of this record are formatted exactly as the corresponding fields in the FTU Student Record Data Base except for a '2' prefix for each field descrip-



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INTERNATIONAL BUSINESS MACHINES CORPORATION

# INFORMATION RECORDS DIVISION MULTIPLE-CARD LAYOUT FORM

Form X24-6599-1

REF ID: A47090

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Company

## Application

b6  
b7C

SIS TEST DATA

Roger W. Sifrit

Date \_\_\_\_\_

3/6/76

06

**DEMIS**

Sheet No.

1

[illegible]

STUDENT ADDRESS									
STREET		CITY		STATE	ZIP	PHONE			
2	SSN								
9	9999999999	9999999999	9999999999	9999999999	9999999999	9999999999	9999999999	9999999999	9999
1	2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80					

[illegible]

## INDEX FIELD

QTR	QTR	QTR
691	692	693

NOTES: ...

1. FC
2. FC
- AS
- (S

R QUARTERS IN WHICH  
R QUARTERS IN WHICH  
FOLLOWS: 1st CHAR  
TARTING CRS), 4th a

I STUD  
I STUD  
(1or2  
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UT ENROLLED  
CONTROLLED  
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COLLED  
D CONS  
2d an  
CRS)

ENTER  
TRUCT  
id 3d

CODE	CHAR
00	0
01	1
02	2
03	3
04	4
05	5
06	6
07	7
08	8
09	9
10	A
11	B
12	C
13	D
14	E
15	F
16	G
17	H
18	I
19	J
20	K
21	L
22	M
23	N
24	O
25	P
26	Q
27	R
28	S
29	T
30	U
31	V
32	W
33	X
34	Y
35	Z
36	[
37	\
38	]
39	^
40	_
41	`
42	{
43	
44	}
45	~
46	
47	!
48	@
49	#
50	\$
51	%
52	&
53	'
54	(
55	)
56	*
57	+
58	=
59	-
60	:
61	;
62	"
63	<
64	>
65	?
66	~
67	
68	!
69	@
70	#
71	\$
72	%
73	&
74	'
75	(
76	)
77	*
78	+
79	=
80	-
81	:
82	;
83	"
84	<
85	>
86	?
87	~
88	
89	!
90	@
91	#
92	\$
93	%
94	&
95	'
96	(
97	)
98	*
99	+

NOTES: 1. TEST DATA CARDS MUST BE HAND SORTED.

1. TEST DATA CANNOT MOST BE HAND COPIED.

2. TEST DATA FOR SIS IS DESIGNED TO BE

USED WITH A 'Y' CARD WITH 'Y711'.

[illegible]

FIGURE 17

SPIN-OFF TEST DATA CARD INPUT FORMATS

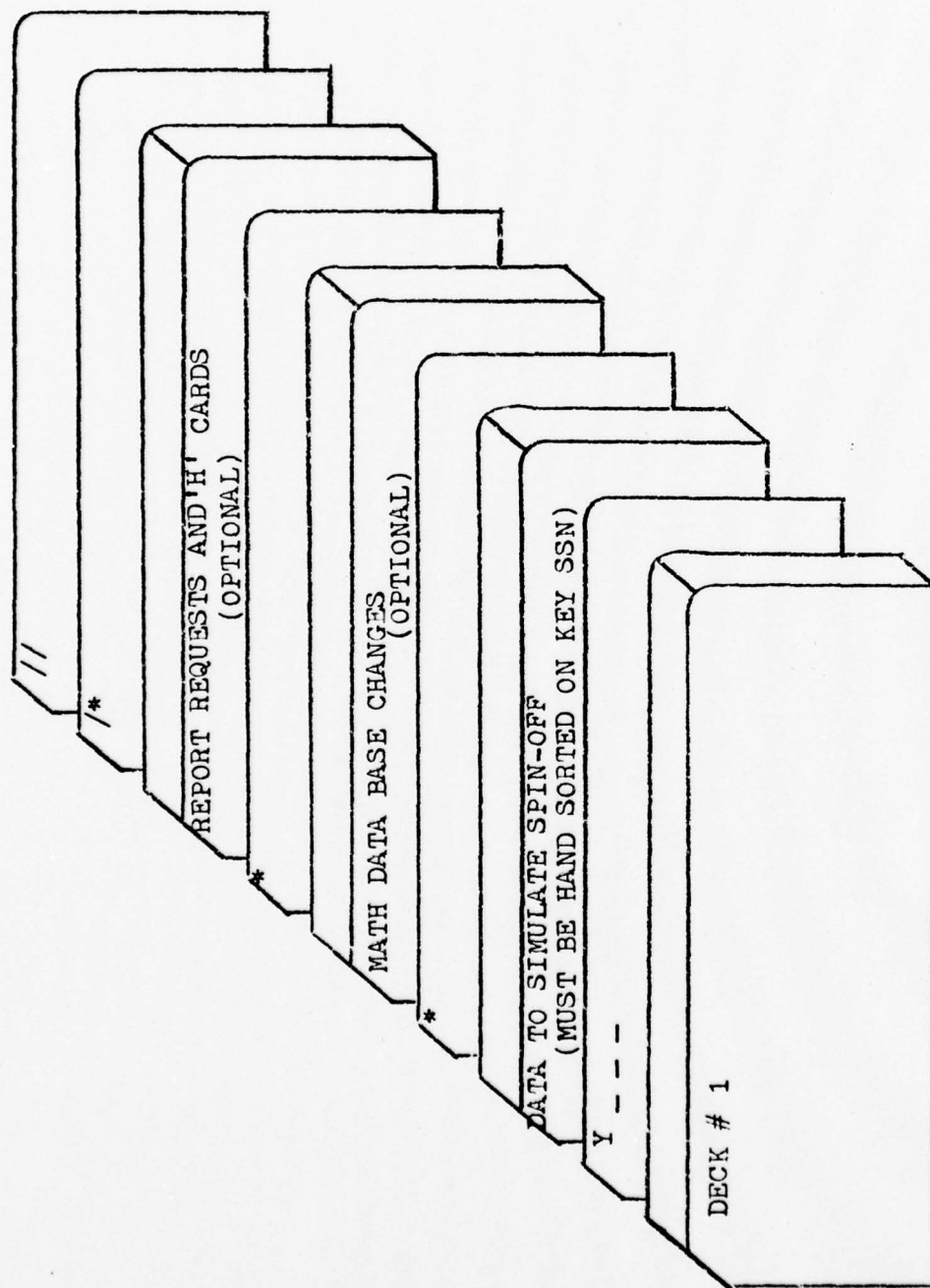


FIGURE 18

DECK FORMAT TO LOAD SPIN-OFF WITH TEST DATA



tion on the FTU Student Record format (e.g. 'LAST-NAME' of the SPIN-OFF-REC of SIS is the receiving field of '2LAST-NAME' of the FTU Student Record). The data description for the required FTU Student Record input is shown in figure 9. The picture description and length of all SPIN-OFF fields are identical to the corresponding record formats of the FTU Student Record Data Base.

#### TIME PARAMETER ADJUSTMENTS

Periodic reviews should be made of the time limit parameters assigned to SIS (both CPU and I-O). Should the actual run times exceed the present limits, appropriate adjustments must be made to the job card in DECK #1.

#### HIPO / SOURCE LISTING CORRESPONDENCE

The following procedure may be used to help locate a specific area of SIS where a program modification is to be made:

- 1) locate the area in question on the HIPO VTOC,
- 2) refer to the I-P-O diagram whose number is referenced by the VTOC,
- 3) when the appropriate I-P-O diagram is found, locate the reference note in the source listing for that particular I-P-O diagram, and

- 4) read the code to locate the appropriate coding to be modified.

The source program for SIS is available at two locations. The original SIS deck is stored in the Department of Mathematical Sciences office. The source listing is also recorded on magnetic tape in the CFRDC PANVALET system.

#### FILE MAINTENANCE

Periodically, SIS should be reviewed to determine if the file space allocation requires modification. Initially SIS was created with the minimum allocation of "SPACE=(TRK,(1,1))". This limit should cause no problems in executing SIS. As certain data bases increase in size, however, inefficiencies may develop and the space parameters should be adjusted.

The sort file work areas used by SIS have space parameters of "SPACE=(TRK(20),,CONTIG)", which should be adjusted upward if the sort merge routines develop problems or if they appear to be inefficient due to an increase in the length of the data files. The first indication of the space problem in sorting will be encountered during a sort-merge of the STUD-DATA-BASE. Adjustments of these space parameters require changes to JCL cards for SORTWKO1, SORTWKO2, and SORTWKO3.

## Chapter 5

### FUTURE DEVELOPMENT OF DEMIS

The following is a very generalized "framework" for the future development of DEMIS, and in keeping with the basic concepts of this paper, the framework should remain flexible and open ended. Possible additional modules of DEMIS are shown in figure 1 and discussed below. Naturally, before undertaking the development of a new module for DEMIS, the designer should determine the system requirements and specifications.

A Student Counselling Module for DEMIS would offer an increased scope of the counselling feature offered by SIS. The counselling module could provide a degree plan for students based on their areas of interest, program requirements, transfer credits and other appropriate considerations. It should produce a written program of instruction for each student, with a copy for his faculty advisor.

A Student Scheduling Module might receive input based on data made available by the Student Counselling Module, a student's program requirements, the work load each student desires to carry, and faculty availability. Projected offerings and a recommended schedule for each student for the following two or more quarters could then be made. Such a system would help optimize class sizes, provide an orderly sequence of course offerings for students, bring about optimum faculty

utilization, reduce faculty workloads and could possibly result in a tangible monetary savings to both students and the school. The facilities for computer science majors (e.g. computer facilities) could be better utilized. Certain programming courses might, for example, be concentrated during summer quarters when school attendance is low. During the remainder of the year a more balanced schedule of programming and non-programming courses could be offered.

The FTU Alumni Association is currently investigating the development of a new computerized alumni information system. If these plans are realized, the data bases developed to support that system could be made available to DEMIS. Some of the information which might be of value would be a periodic listing of alumni and the type of jobs they hold. This would be valuable for curriculum development and counselling and could provide feedback to faculty so that adjustments might be made to the approach and content of individual course offerings. The result could be dynamic, "self evaluating" curriculum development procedure for the Department.

A Departmental Statistical Summary Module may be designed to provide statistical data, primarily from other DEMIS modules and data bases, for management use within the department. Such data might include student enrollment, faculty qualifications and specialties, alumni employment, evaluation of the "strengths" of FTU students (based on course balance),

average grade evaluation, and other similar areas. This data could be used to support management decisions, to provide information to potential students, and to determine qualifications and prerequisites for admission based on the profile of a typical successful student. The information provided by this system might also provide a profile to be used in the selection of new faculty members.

These are some modules which may be added to DEMIS to increase the management type information available to the staff and faculty of the Department of Mathematical Sciences. In addition to supporting activities in the Department, several other benefits can accrue from development of DEMIS. The design and construction of additional modules as student projects can provide an excellent opportunity for students interested in computer business applications, and specifically management information systems. The experience gained in developing a production system cannot be matched in any other way and can integrate the formal course work of the student. It could better prepare the student for the business world by providing him with experience and confidence.

Other student projects might be realized in generalizing DEMIS so that it can be used in other departments.

#### CONCLUSION

SIS provides student information and is the initial module



of DEMIS. SIS is designed to be operated with a minimum of time, effort, and technical expertise, and it provides useful data to support administrative and student advisement activities within the Department of Mathematical Sciences.

The approach used to produce DEMIS is a valid concept in MIS development. While the case study presented in this paper pertained to an educational institution, it is equally applicable to an organization with existing ADP facilities and sufficient capacity to support an additional MIS.

The generalized flexible framework forces consideration of the other potential modules without the requirement for a formal study and the danger of delay in satisfying immediate information requirements. It also prevents the danger of becoming "locked" into a rigid framework which will not provide the flexibility necessary to meet rapidly changing information requirements.

The implementation of individual modules creates a quickly realizable goal, and can produce tangible results in a short period of time. This makes this approach both attractive and economical.

The informal procedures to implement modules can, however, be dangerous. Certainly any large system which represents a sizeable and costly undertaking should meet formal procedural requirements as listed in Chapter 1.

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Appendix A  
ERROR MESSAGES

## ERROR MESSAGES

The error messages generated by SIS are listed below in alphabetical order with an appropriate user response. The more significant error messages generated will include an '\*' as the first character of the error message. Note that where the message includes the comment 'THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)' that the referenced card has been completely ignored by SIS.

01 MSG: ATTENDANCE DATA ENTRY TO BE DELETED NOT FOUND. THE FOLLOWING INPUT CARD DISREGARDED: (CARD IMAGE)  
User Response: A request was made to delete an attendance data entry, and the entry could not be found. Check for the correct SSN on input cards, check to make sure that column 1 has the correct code, and check previous listing of data to ensure that the entry to be deleted is exactly the same as on the listing. The listing should also be checked to ensure that previously entered incorrect data is not on the record (i.e. an inbeded space in the data string, a leading space in the data string, or a missing or extra character in the data string). If the input card is incorrect make appropriate changes. If an incorrect data string is found in



the student record the entire data field must be purged using a 'Z' format card followed on the next SIS run with a 'Q' format card with corrected attendance record data.

02 MSG: \* CANNOT DETERMINE IF (STUDENT LAST NAME, STUDENT FIRST NAME, STUDENT SSN) IS GRAD, UG, OR PB - IS NOT INCLUDED IN STATISTICS.

User response: SPIN-OFF file does not show the level of study of the student indicated. If SPIN-OFF file is loaded from test data, an error is probably present in the test data. If SPIN-OFF file is loaded with FTU Student Record Data, then consult with the Data Base Administrator.

Note: Statistics reports will not include this student.

03 MSG: \* CANNOT DETERMINE LAST QRT ATTENDED FOR (STUDENT LAST NAME, STUDENT FIRST NAME, STUDENT SSN). CHECK SPIN-OFF DATA AND CURRENT QRT INPUT.

User Response: SPIN-OFF file does not show the student indicated as being enrolled in the quarter specified on the 'Y' card or any previous quarter. If SPIN-OFF file is loaded with test data, an error is probably present in the test data. If SPIN-OFF file is loaded with FTU Student Record Data, then check for incorrect data on the 'Y' card. If 'Y'

card is correct consult the Data Base Administrator.

Note: Statistics reports will not include **this** student.

04 MSG: \* CANNOT DETERMINE MAJOR OF (STUDENT LAST NAME, STUDENT FIRST NAME, STUDENT SSN) DATA NOT INCLUDED IN STATISTICS.

User Response: SPIN-OFF file indicates that the subject student is not a MATH, COMP, or STAT major. If SPIN-OFF file is loaded with test data, an error is probably present in the test data. If SPIN-OFF file is loaded with FTU Student Record Data, then consult with the Data Base Administrator.

Note: Statistics Report will not include **this** student.

05 MSG: CANNOT LOCATE RECORD TO BE CHANGED FOR SSN (SSN FROM INPUT CARD) THE FOLLOWING INPUT CARD DISREGARDED: (CARD IMAGE).

User Response: A request was made to delete or alter data in a student record in the MATH-DATA-BASE, probably with card format 'Z', 'X', or 'D'. The SSN on the change card did not match any record in the MATH-DATA-BASE, and so SIS could not make the correction. Check for proper code in column 1 of the change card, or for incorrect SSN in columns 2-10.

06 MSG: ENTRY TO BE DELETED NOT FOUND IN STATISTICS HIST  
FILE THE FOLLOWING INPUT CARD DISREGARDED: (CARD  
TEXT)

User Response: An 'H' change to delete an entry in  
the Statistics History file was made, and SIS could  
not locate the entry to be deleted. Check the date  
on the input card with a current listing for cor-  
rectness, check the 'H' card format to ensure that  
the correct data is in columns 2 through 7 of the  
input card. If an addition was to be made to the  
Statistics History file, check for zeros incorrectly  
filling columns 8 through 32 of the input card.

07 MSG: \* EXPECTED BUT DID NOT FIND \* TO INDICATE END MARKER  
FOR SPIN-OFF. THE FOLLOWING INPUT CARD DISREGARDED:  
(CARD TEXT).

User Response: If SPIN-OFF is loaded with FTU Stu-  
dent Record Data, the first two input cards were not  
a 'Y' card followed by a card with an '\*' in column  
1. As a result, the SPIN-OFF data base has been  
damaged. Correct the job deck and rerun SIS after  
SPIN-OFF has been reloaded. If SPIN-OFF is being  
loaded with test data insert an '\*' after the test  
data and rerun SIS.

08 MSG: \* EXPECTED TO FIND \* AT END OF MATH CHANGE CARD INPUT  
FOUND INSTEAD THE FOLLOWING DATA WHICH IS DISRE-

GARDED: \* CARD IMAGE: (CARD TEXT).

User Response: A card with the asterisk in column 1 must immediately follow the last MATH-DATA-BASE change card. SIS found instead a character which was not a change request nor an asterisk. If a card with an asterisk in column 1 is missing, place one in the DECK (figure 13). If the card text indicates that it is for a MATH-DATA-BASE change, check the card format for correct code in column 1, and resubmit change. If the disregarded card was a report request, the report will not be generated.

09 MSG: ILLEGAL ENTRY ON HISTORY ALTERATION REQUEST. THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT).

User Response: An 'H' card contains illegal data. Check proper format for 'H' card, repunch card and rerun SIS.

10 MSG: ILLEGAL ENTRY ON REPORT REQUEST. THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)

User Response: Column 1 of the input card contained a valid character to generate a report, however other extraneous data was found on the card. Check the input card for extraneous data (if it is a report request) or for an incorrect code in column 1 (if it is not a report request).

- 11 MSG: ILLEGAL ENTRY ON YEAR AND QUARTER INPUT CARD THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)  
User Response: 'Y' card contains illegal data in columns 5 through 80 and was out of place. Probable cause is wrong use of 'Y' in column 1.  
Check card and correct data in column 1.
- 12 MSG: ILLEGAL INPUT ON ADVISOR INPUT CARD THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)  
User Response: 'V' card has blanks or alphabetic characters in columns 2 through 10 or numeric data appears in columns 11 through 80. Check 'V' format and correct the card (if input was intended to be a 'V' card) or check for an incorrect code in column 1.
- 13 MSG: INVALID CODE IN COLUMN 1 OF INPUT CARD. THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)  
User Response: An unauthorized code was entered in column 1 of input card. Check proper format and enter correct code on card.
- 14 MSG: \* INVALID CURRENT QUARTER SPECIFIED ON INPUT CARD - PROCESSING TERMINATING. THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)  
User Response: 'Y' card contained an invalid quarter code. Check quarter code list (appendix B) for



correct conversion data, make correction and rerun SIS.

15 MSG: INVALID SSN ON INPUT CARD. THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)

User Response: Check input card SSN for blanks or non-numeric data in columns 2 through 10.

16 MSG: MEMBERSHIP ENTRY TO BE DELETED NOT FOUND. THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)

User Responses: A request was made to delete an association membership entry, however the entry could not be found. Check for correct SSN in columns 2 through 10 of input card, then ensure that the data to be deleted is exactly the same on both the input card and a current listing. Check to make sure that the correct code was entered in column 1 of the input card.

17 MSG: \*\* MISSING OR OUT OF SEQUENCE CURRENT QUARTER CARD PROCESSING TERMINATING THE FOLLOWING INPUT CARD DISREGARDED: (CARD TEXT)

User Response: 'Y' card was not found as the first card of the job deck as required. SIS has been aborted. Check job deck for proper placement of 'Y' card, then rerun SIS.

18 MSG: \* NO INPUT FROM STUD DATA BASE.

User Response: While attempting to generate a

report, SIS found no data in the STUD-DATA-BASE. Probable cause is no data in SPIN-OFF file. If SPIN-OFF is loaded with test data, ensure that input deck is correctly formatted, then rerun SIS. If SPIN-OFF is loaded with FTU Student Record Data, then ensure that the first two cards of the job deck contain a 'Y' card immediately followed by a card with an '\*' in column 1. If not, SPIN-OFF file has been damaged, and it must be reloaded before SIS is rerun. If the job deck is correct then attempt to rerun SIS. If the same error message is generated, consult with the Data Base Administrator.

19 MSG: \* SSN (SSN OF STUDENT) NOT FOUND IN FTU SUPPLIED DATA. VERIFY SSN.

User Response: A student listed in the MATH-DATA-BASE (by SSN) cannot be located in SPIN-OFF file. If SPIN-OFF is loaded with test data, incorrect test data is the probable cause. If SPIN-OFF is loaded from FTU Student Record Data, then verify the correctness of the student's SSN in the MATH-DATA-BASE. If the student is a COMP, MATH, or STAT major, then consult with the Data Base Administrator. Note: Statistics report will not include this student.

Appendix B  
CURRENT QUARTER TABLE

Current Quarter Codes

Academic Quarter	Current Quarter Code Recognized by SIS	Sequential Quarter
F68	691	01
W69	692	02
S69	693	03
U69	694	04
F69	701	05
W70	702	06
S70	703	07
U70	704	08
F70	711	09
W71	712	10
S71	713	11
U71	714	12
F71	721	13
W72	722	14
S72	723	15
U72	724	16
F72	731	17
W73	732	18
S73	733	19
U73	734	20
F73	741	21
W74	742	22
S74	743	23
U74	744	24

Academic Quarter	Current Quarter Code Recognized by SIS	Sequential Quarter
F74	751	25
W75	752	26
S75	753	27
U75	754	28
F75	761	29
W76	762	30
S76	763	31
U76	764	32
F76	771	33
W77	772	34
S77	773	35
U77	774	36
F77	781	37
W78	782	38
S78	783	39
U78	784	40



Appendix C

SIS LISTING

(LISTING IS EXTERNAL TO THE BOUND REPORT)

Appendix D

HIPO INPUT-PROCESS-OUTPUT (I-P-O) DIAGRAMS



# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT

System/Program: DEMIS

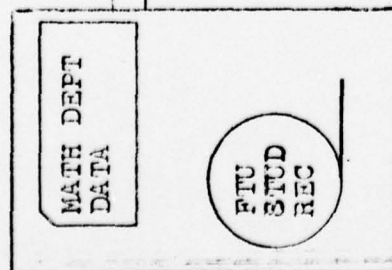
Date: 3/6/76 Page: 1 of 1

Diagram ID: 1.0

Name: DEMIS

Description: DEPT OF MATH INFO SYSTEM

Input

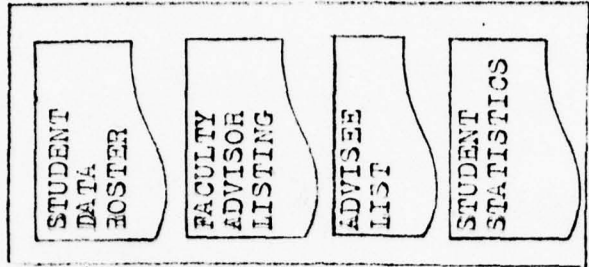


Process

1. Provide administrative and  
counselling data about  
students. 2.0

Other subsystems  
to be added.

Output





# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT

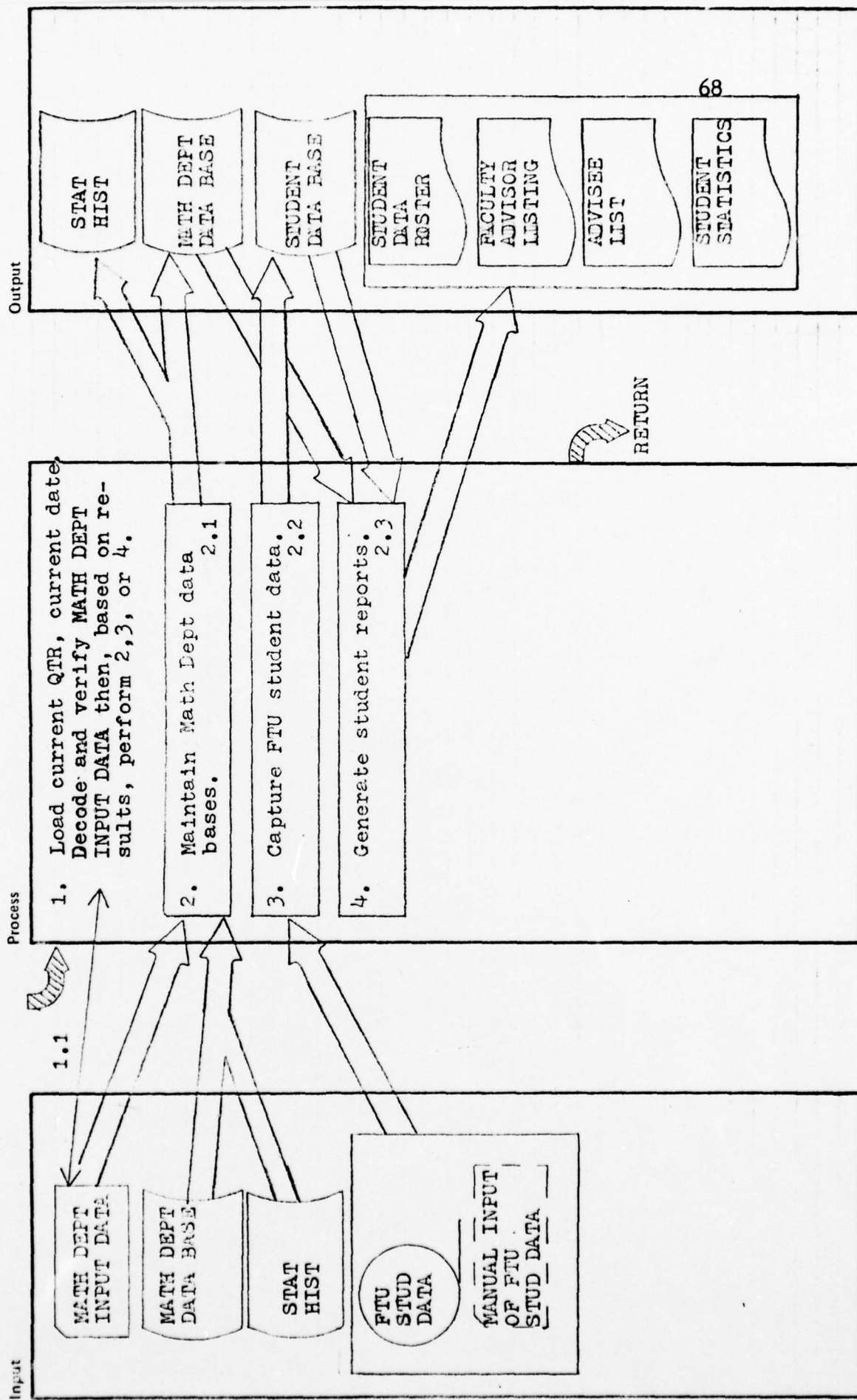
System/Program: SIS

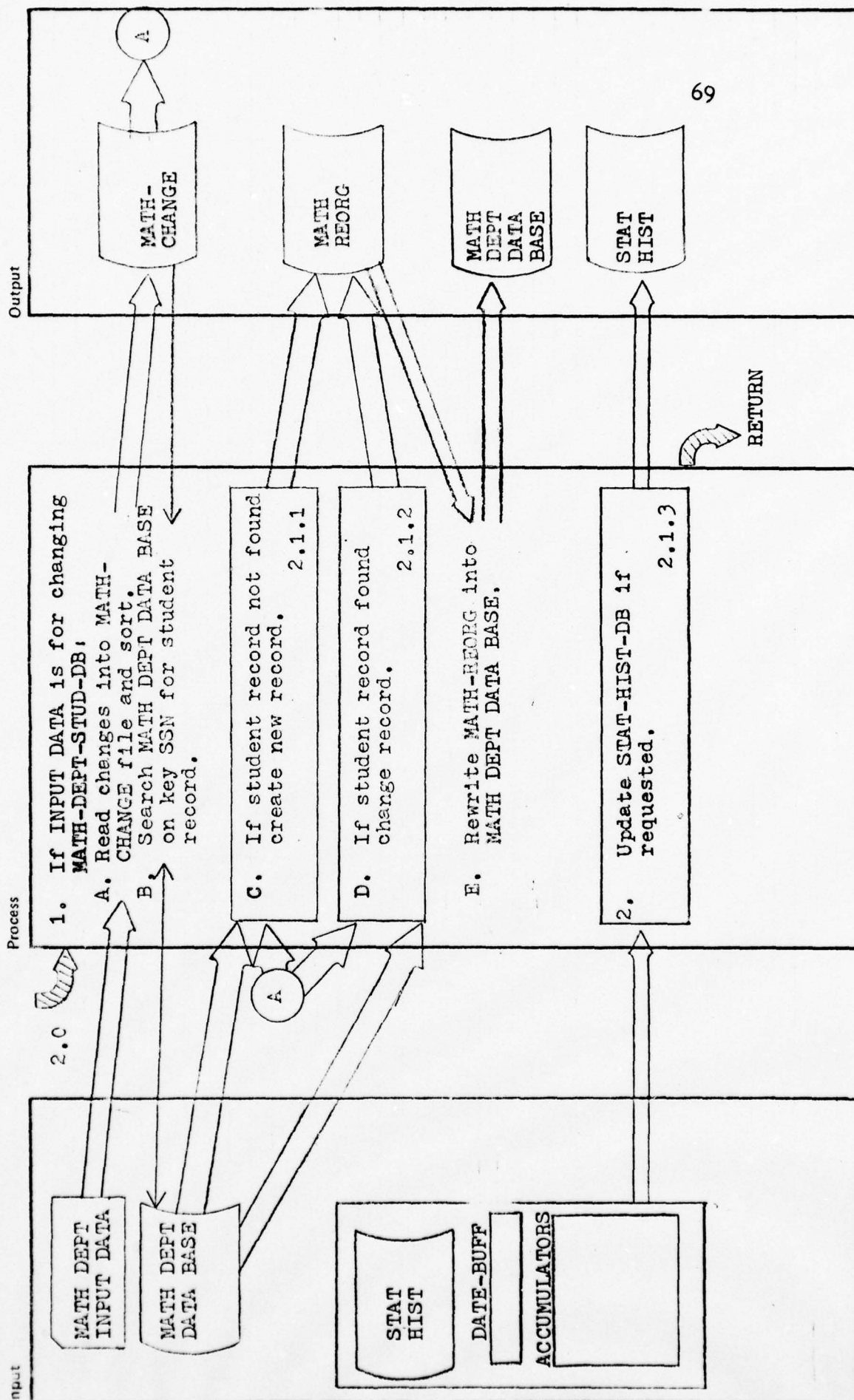
Date: 3/6/76 Page: 1 of 1

Diagram ID: 2.0

Name: SIS

Description: STUDENT INFORMATION SYSTEM



Author: ROGER SIFRITSystem/Program: SISDate: 3/6/76 Page: 1 of 1Diagram ID: 2.1Name: MATH-LOAD-UPDATEDescription: MAINTAIN MATH DEPT DATA BASE





# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT

System/Program: SIS

Date: 3/6/76 Page: 1 of 1

Diagram ID: 2.1.1

Name: CREATE-MATH-REC

Description: CREATE NEW MATH DEFT RECORD

Input

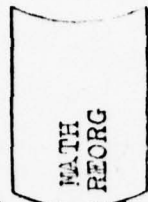
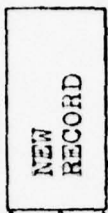


2.1

Process

1. Null all fields in new record.
2. Move input data to appropriate fields of new record.
3. Write new record in MATH REORG.

Output



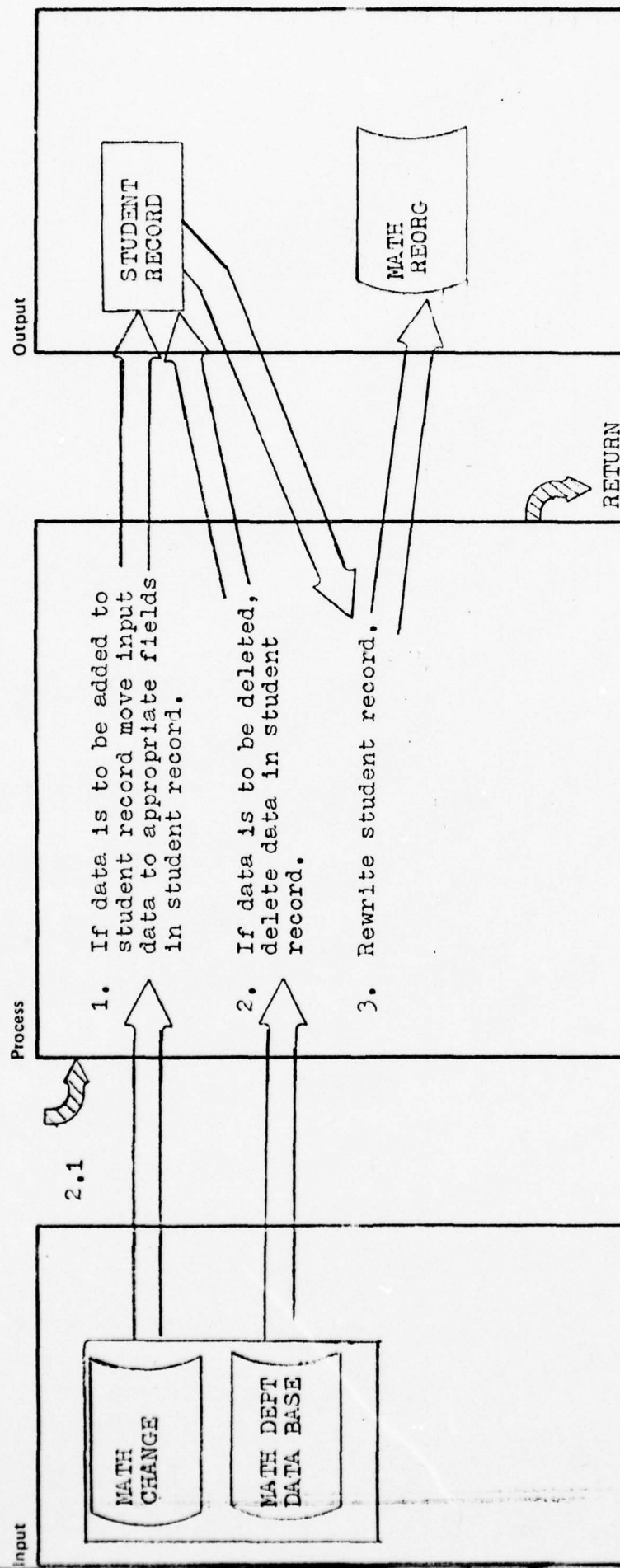
RETURN



# HIPO WORKSHEET

GX20-1970-0 U/M 025 •  
Printed in U.S.A.

Author: ROGER SIFRIT System/Program: SIS Date: 3/6/76 Page: 1 of 1  
Diagram ID: 2.1.2 Name: UPDATE-MATH-REC Description: UPDATE MATH DEPT DATA BASE RECORD





# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT

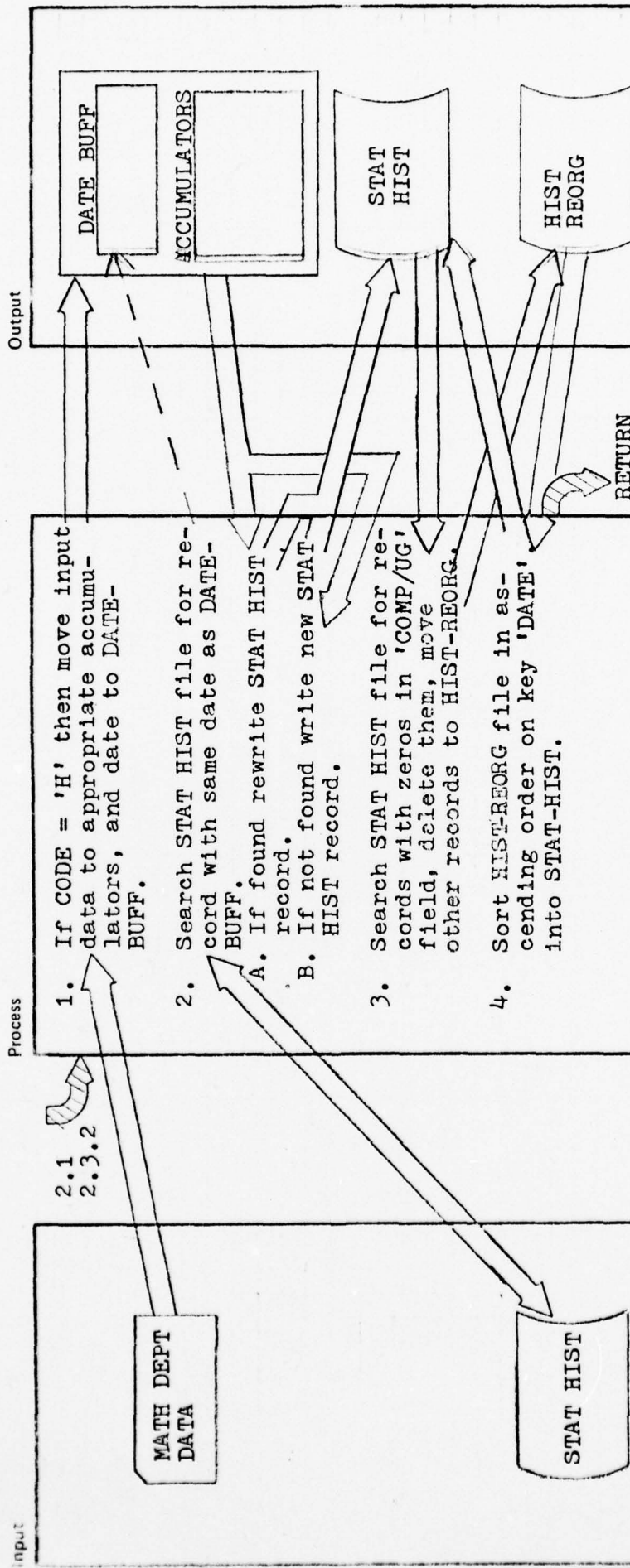
System/Program: SIS

Date: 3/20/76 Page: 1 of 1

Diagram ID: 2.1.3

Name: STAT-HIST

Description: MAINTAIN STATISTICS HISTORY FILE





# HIPO WORKSHEET

GX20-1970-0 U/M 025 •  
Printed in U.S.A.

Author: ROGER SIFRIT

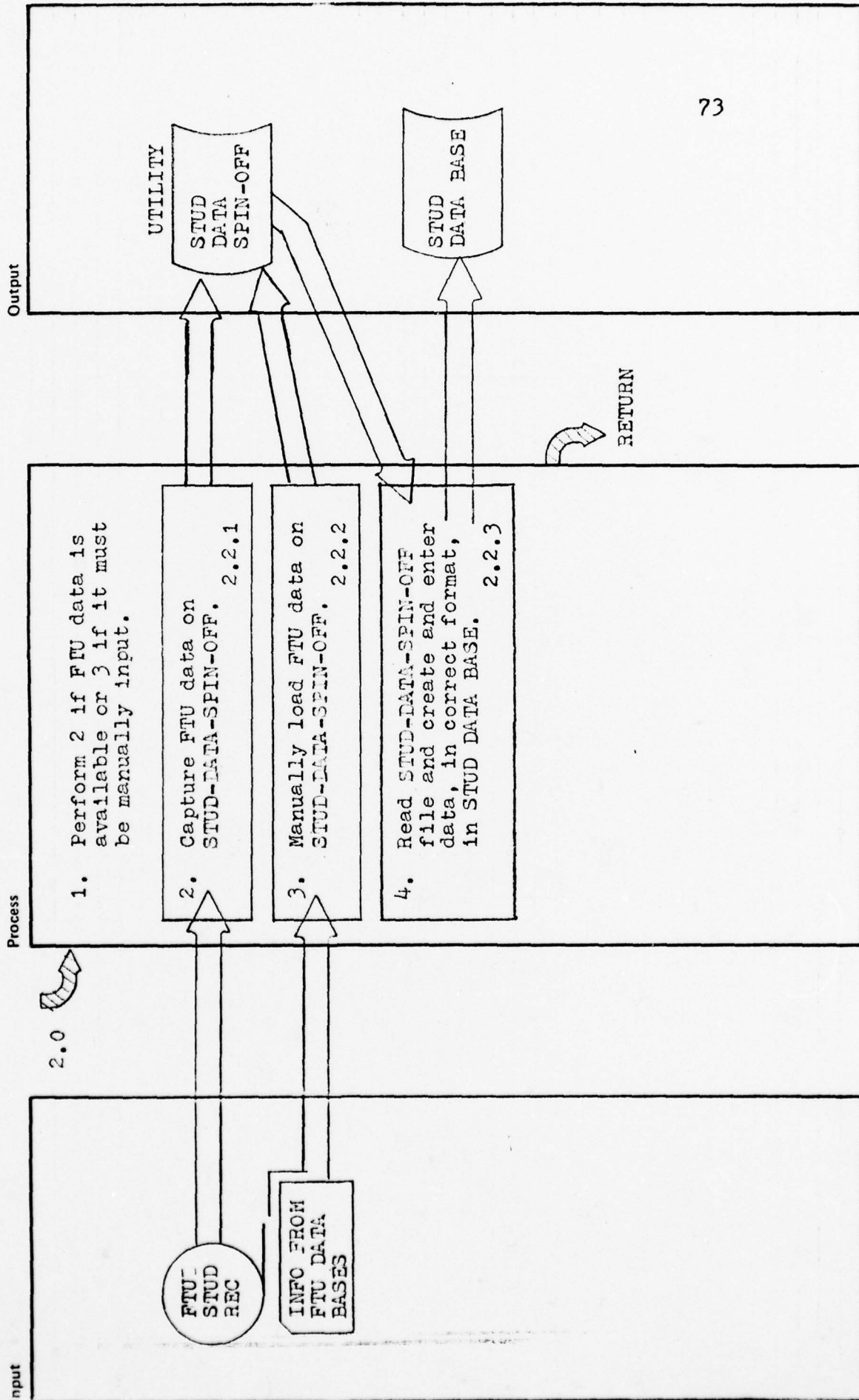
System/Program: SIS

Date: 3/6/76 Page: 1 of 1

Diagram ID: 2.2

Name: LOAD-FTU-DATA

Description: LOAD FTU STUDENT DATA







# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT

System/Program: SIS

Date: 3/6/76 Page: 1 of 1

Diagram ID: 2.2.1

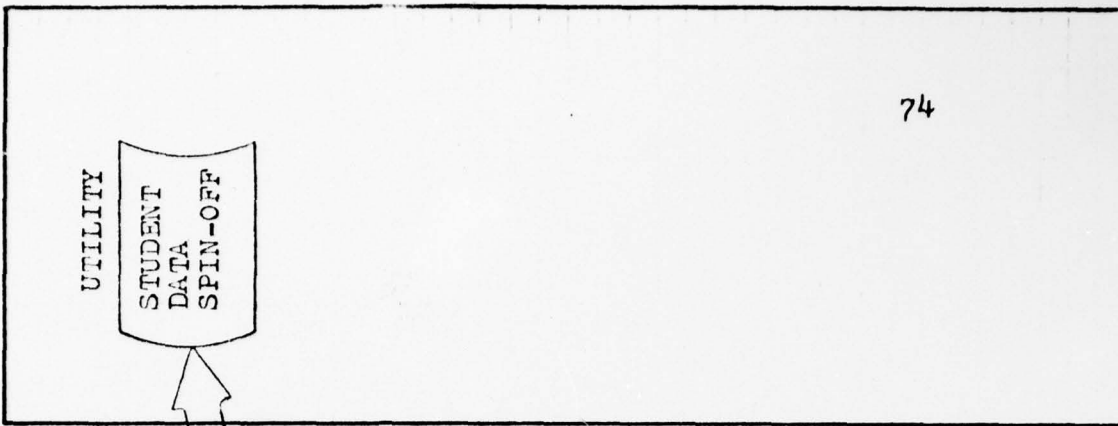
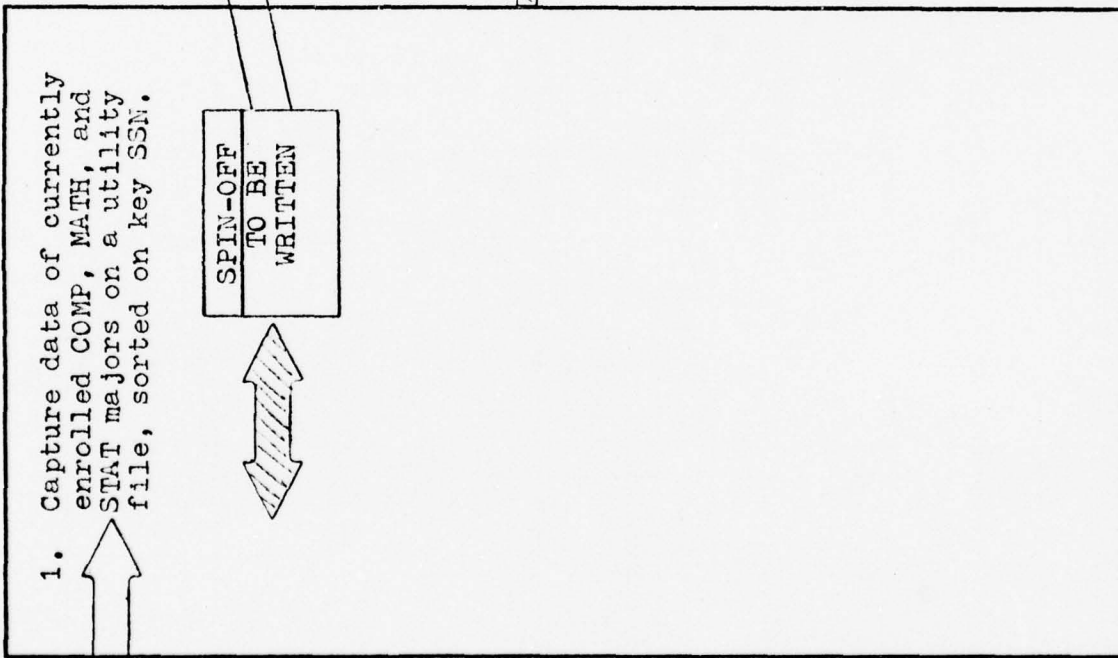
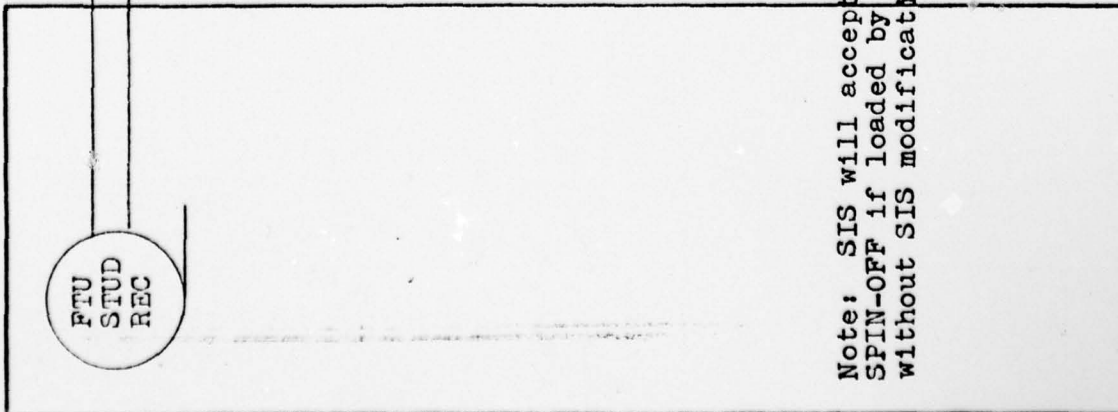
Name: GET-SPIN-OFF

Description: CAPTURE FTU DATA ON SPIN-OFF FILE

Input

Process

Output



Note: SIS will accept data from SPIN-OFF if loaded by the DBA, without SIS modification.



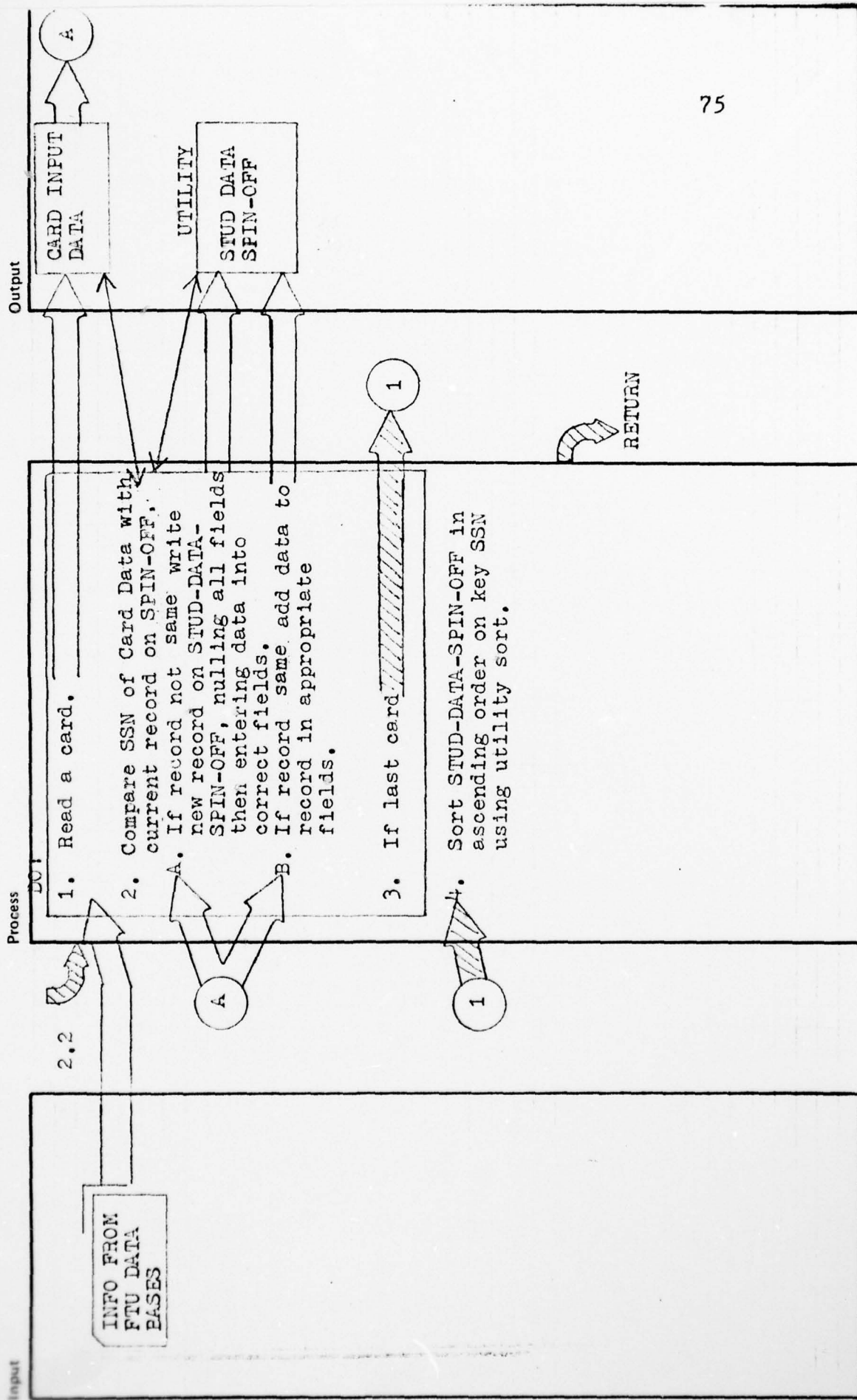
Author: ROGER SIPRIT

Diagram ID: 2.2.2

System/Program: SIS

Date: 3/6/76 Page: 1 of 1

Description: MANUALLY LOAD FTU DATA ON SPIN-OFF

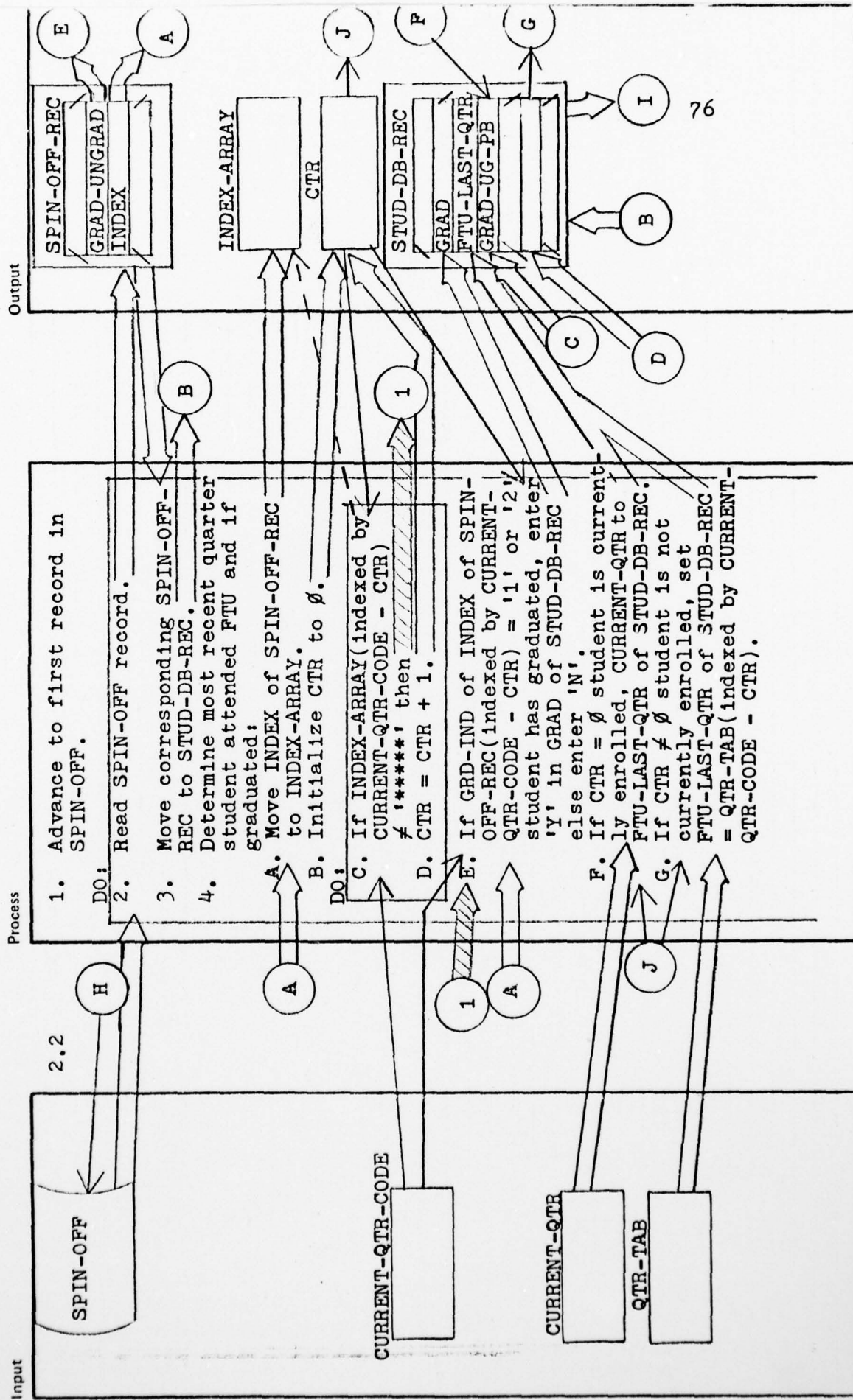




# HIPO WORKSHEET

GX20-1970-0 U/M 025  
Printed in U.S.A.

Author: ROGER SIFRIT System/Program: SIS Date: 3/28/76 Page: 1 of 2  
Diagram ID: 2.2.3 Name: LOAD-STUD-DB Description: LOAD STUD-DATA-BASE FROM SPIN-OFF





# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT

System/Program: SIS

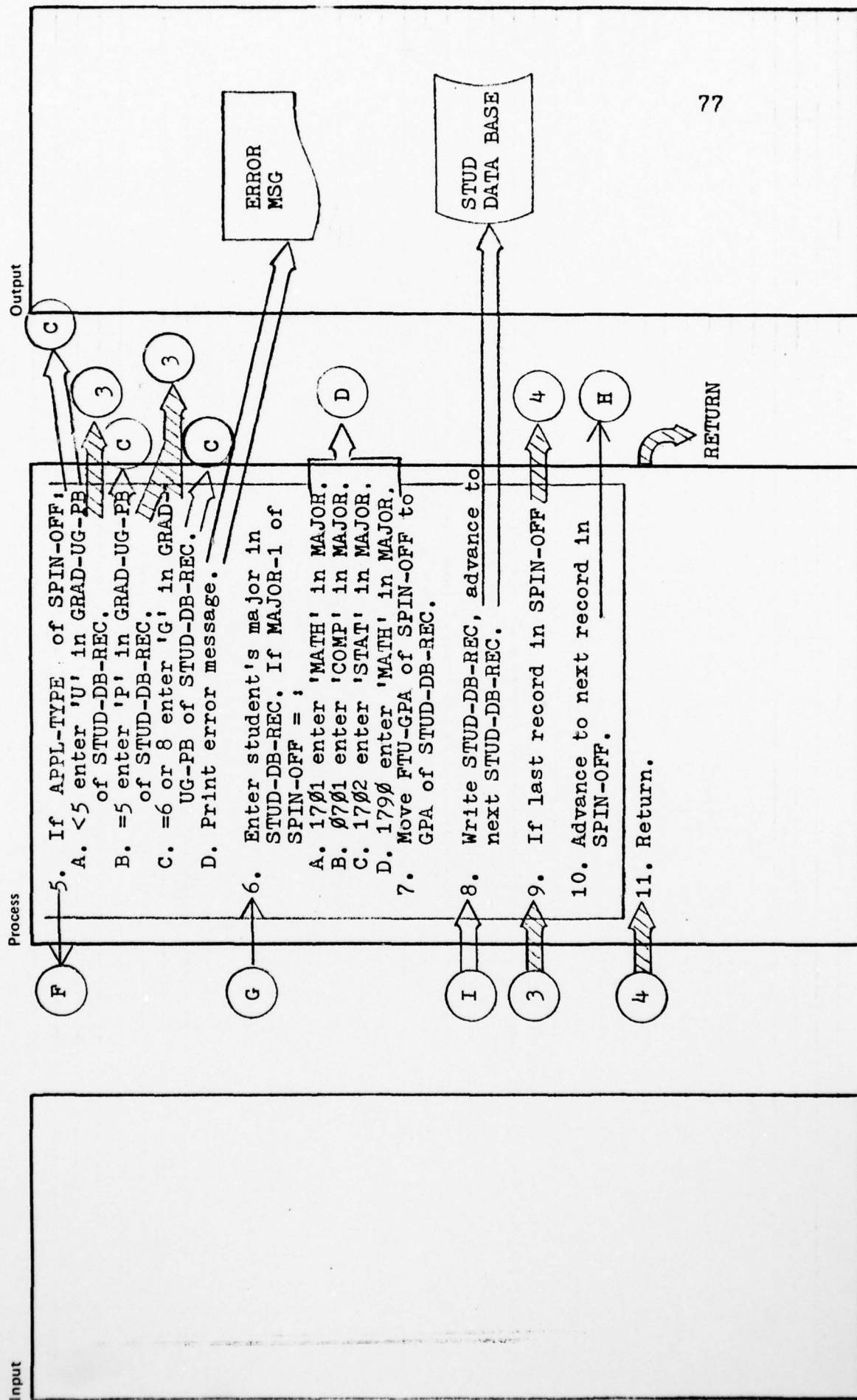
Date: 3/28/76

Page: 2 of 2

Diagram ID: 2.2.3

Name: LOAD-STUD-DB

Description: LOAD STUD-DB-BASE FROM SPIN-OFF





# HIPO WORKSHEET

Author: ROGER SIFRIT

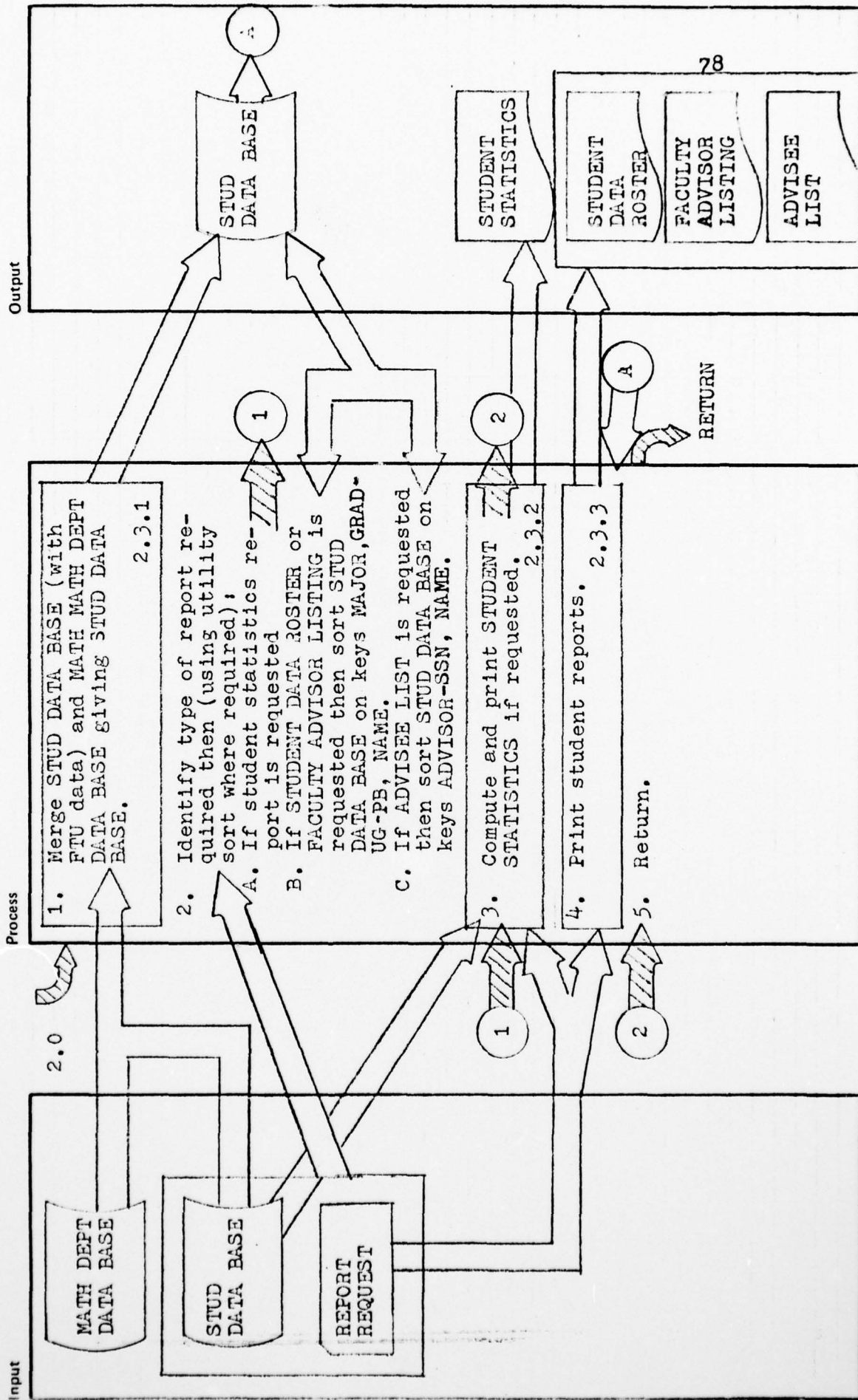
System/Program: SIS

Date: 3/6/76 Page: 1 of 1

Diagram ID: 2.3

Name: GENERATE-REPORTS

Description: GENERATE STUDENT REPORTS



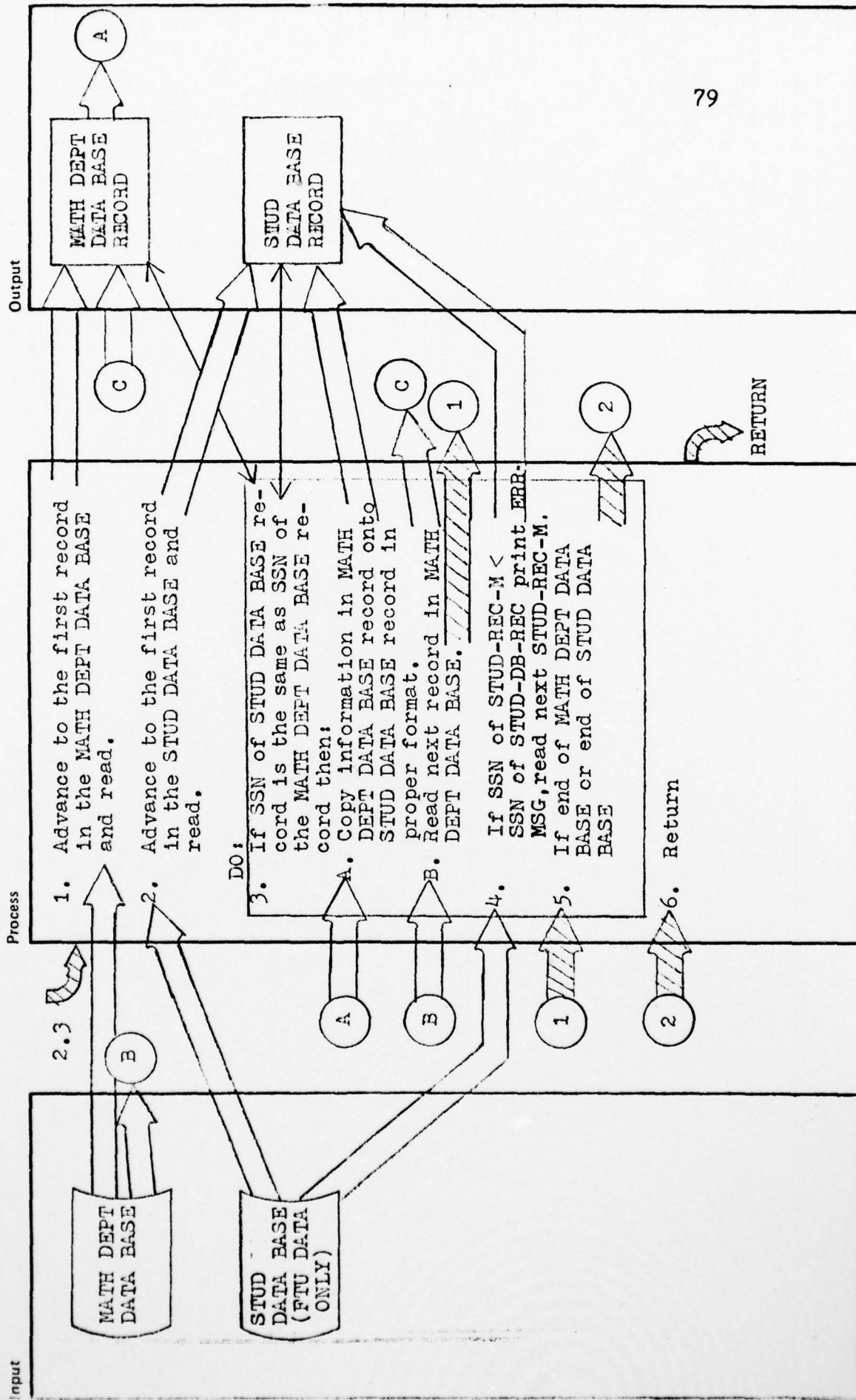




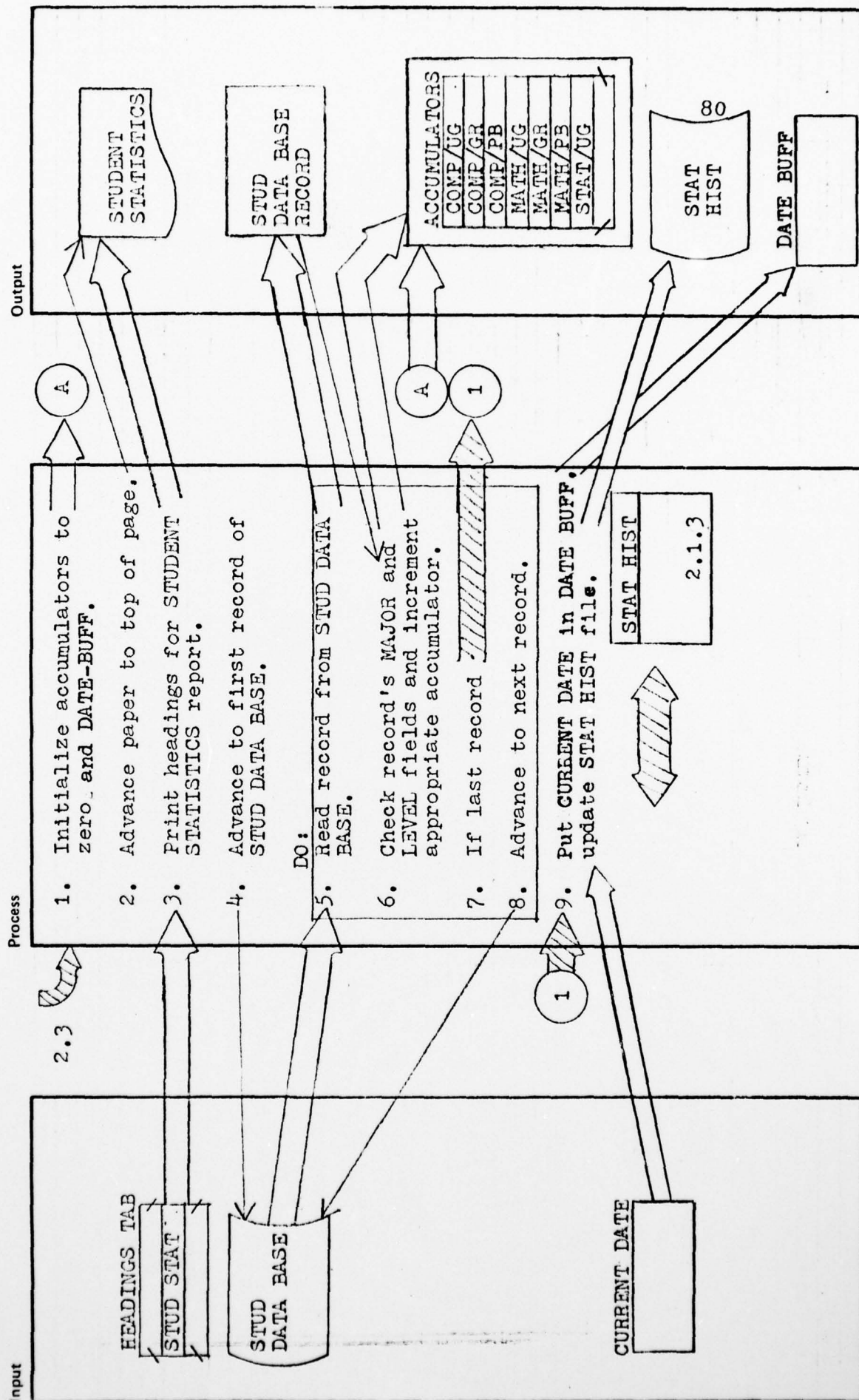
# HIPO WORKSHEET

GX20-1970-0 U/M 025 •  
Printed in U.S.A.

Author: ROGER SIFRIT System/Program: SIS Date: 3/6/76 Page: 1 of 1  
Diagram ID: 2.3.1 Name: MERGE-DEPT DATA Description: MERGE FTU AND MATH DATA

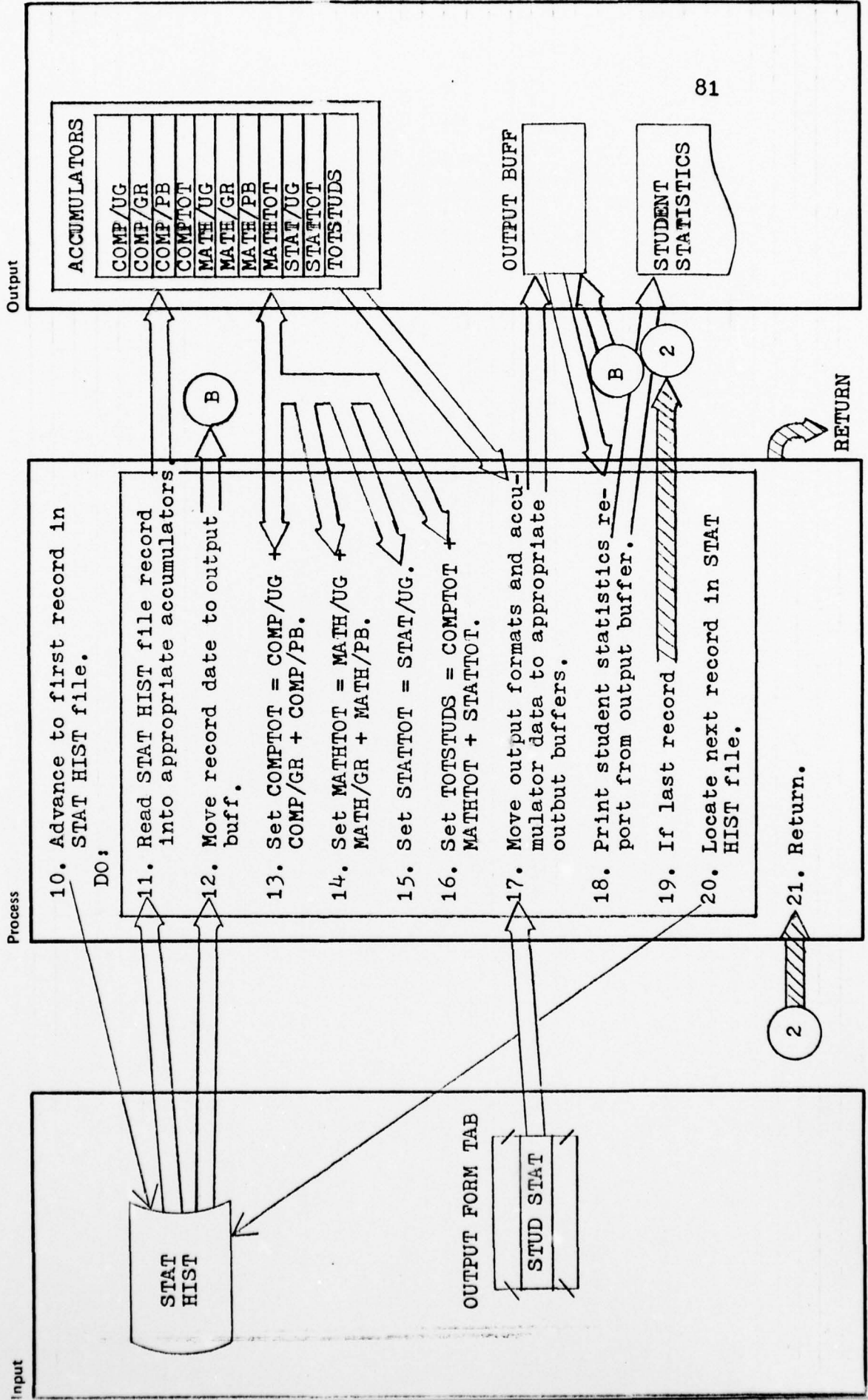






# HIPO WORKSHEET

Author: ROGER SIFRIT System/Program: SIS Date: 3/20/76 Page: 2 of 2  
Diagram ID: 2.3.2 Name: PRINT-STAT Description: COMPUTE AND PRINT STUDENT STAT

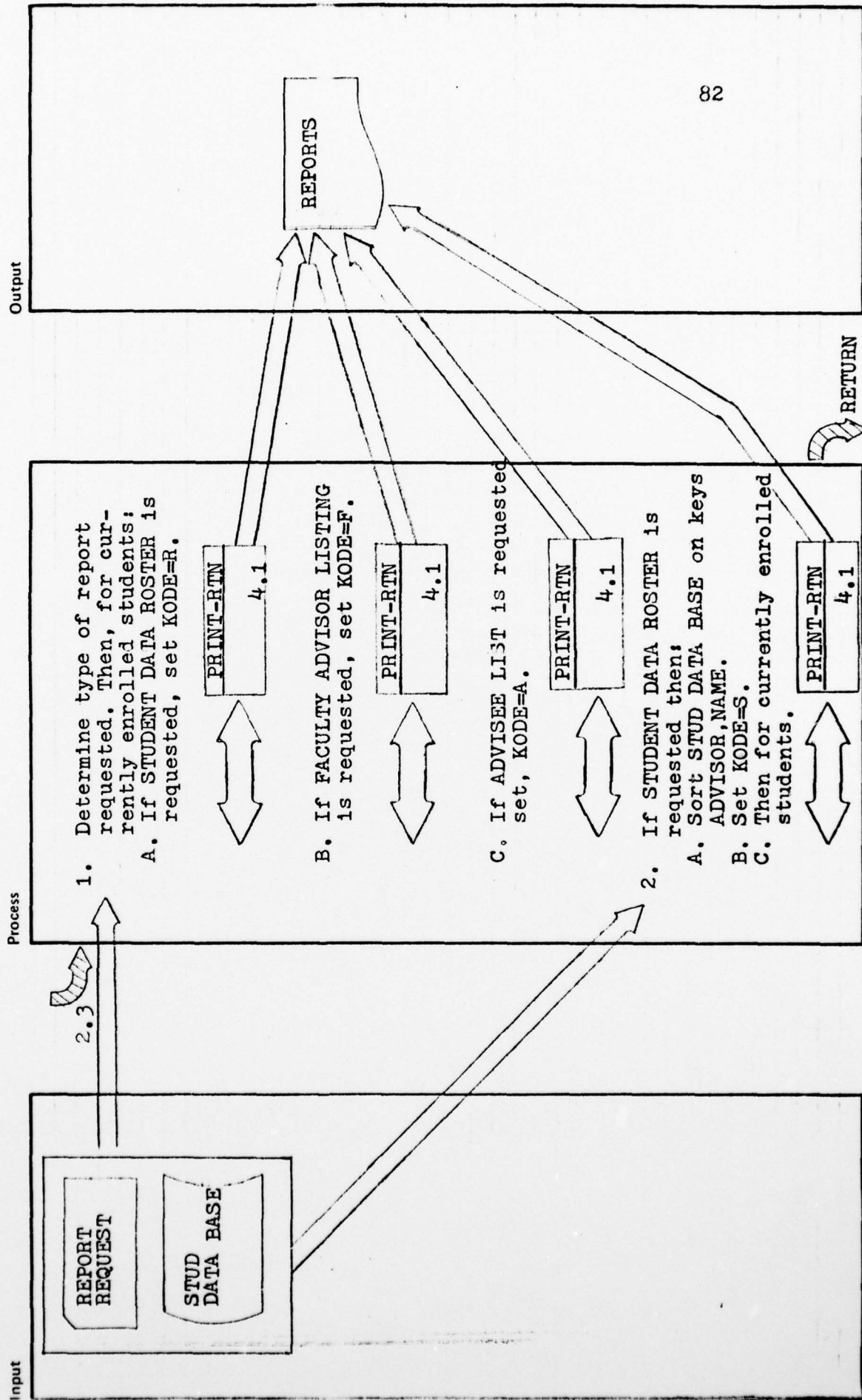




# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIFRIT System/Program: SIS Date: 3/6/76 Page: 1 of 1  
Diagram ID: 2.3.3 Name: PRINT-REPT Description: PRINT STUD REPORTS





# HIPO WORKSHEET

GX20-1970-0 U/M 025 \*  
Printed in U.S.A.

Author: ROGER SIPRIT

System/Program: SIS

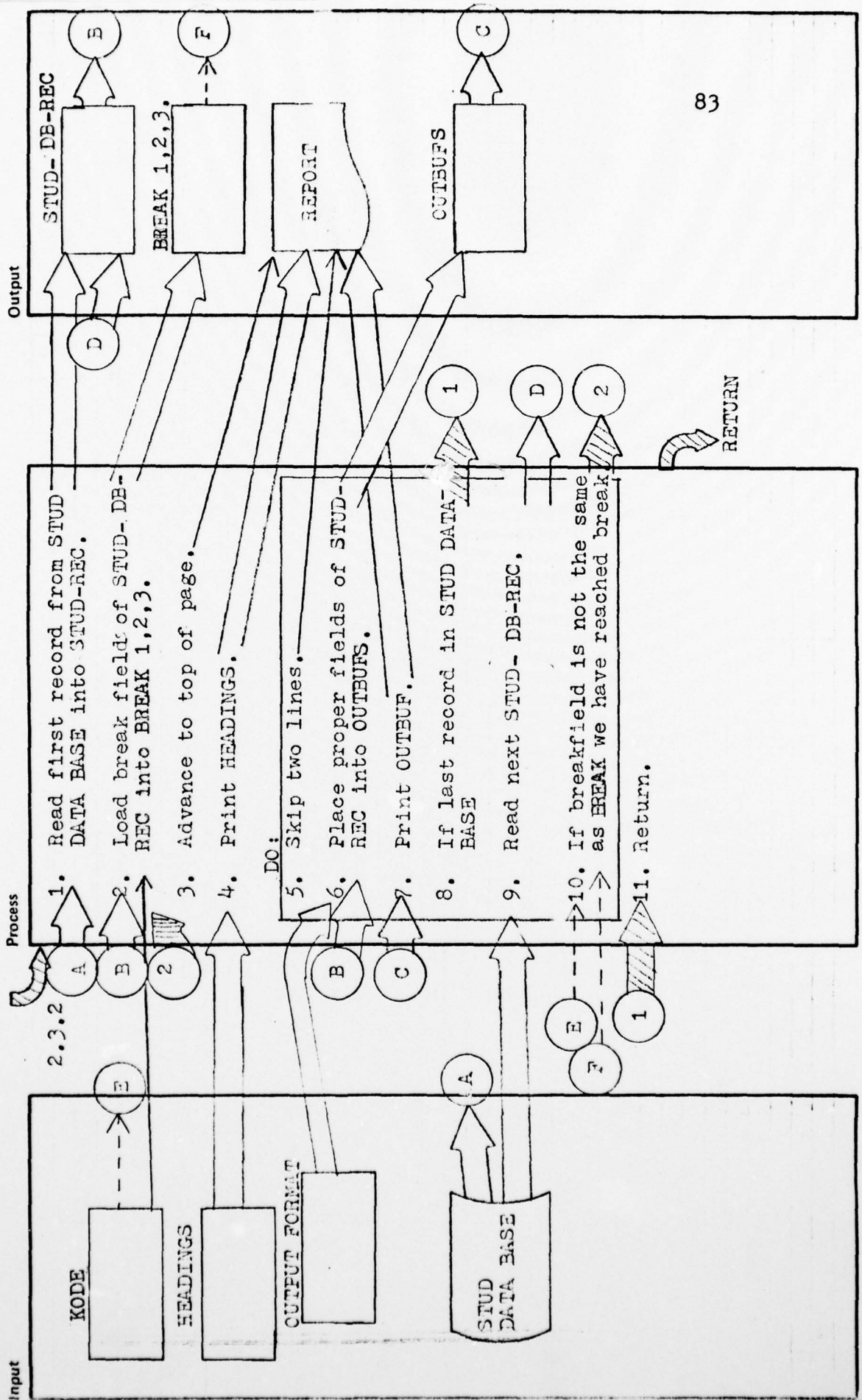
Date: 3/6/76

Page: 1 of 1

Diagram ID: 4.1

Name: PRINT-RTN

Description: PRINT SUBROUTINE





Appendix E  
SIS DECK LISTINGS



```

//COMP698P JOB (1770.3386,NCLZ,FTU,25,34,),'ROGER SIFRIT',CLASS=H,
//JOB LIB DD DSN=FTU.OU.P1770.PRMOD,DISP=SHR
//STEP1 EXEC PGM=SYS
//PROUT DD SYSOUT=A
//DISKSP0 DD DSN=FTU.OU.P1770.SPO,
//DISP=(OLD,KEEP),
//SPACE=(TRK,(1,1)),
//UNIT=DISK,VOL=SER=FTUPK1
//DISKS08 DD DSN=FTU.OU.P1770.SDR,
//DISP=(NEW,DELETE),
//SPACE=(TRK,(1,1)),
//UNIT=3330
//DISKMD8 DD DSN=FTU.OU.P1770.MDB,
//DISP=(OLD,KEEP),
//SPACE=(TRK,(1,1)),
//UNIT=DISK,VOL=SER=FTUPK1
//HIST08 DD DSN=FTU.OU.P1770.HDR,
//DISP=(OLD,KEEP),
//SPACE=(TRK,(1,1)),
//UNIT=DISK,VOL=SER=FTUPK1
//DISKMR DD DSN=FTU.OU.P1770.MR,
//DISP=(NEW,DELETE),
//SPACE=(TRK,(1,1)),
//UNIT=3330
//DISKCG DD DSN=FTU.OU.P1770.CG,
//DISP=(NEW,DELETE),
//SPACE=(TRK,(1,1)),
//UNIT=3330
//DISKHR DD DSN=FTU.OU.P1770.HR,
//DISP=(NEW,DELETE),
//SPACE=(TRK,(1,1)),
//UNIT=3330
//SORTLIB DD DSN=SYS1.SORTLIB,DISP=SHR
//SORTWK01 DD UNIT=SYSDA,SPACE=(TRK,(20)),CONTIG)
//SORTWK02 DD UNIT=SYSDA,SPACE=(TRK,(20)),CONTIG)
//SORTWK03 DD UNIT=SYSDA,SPACE=(TRK,(20)),CONTIG)
//SYSOUT DD SYSOUT=A
//OUTSORT DD
//READER DD *

```

\*\*\*\*\*

INSERT DATA HERE

\*\*\*\*\*

```

//COMP69AP JOB (1770,3376,NCLZ,FTU,5,5),'ROGER SIFRIT',CLASS=H, X
// MSGLEVEL=(1,1)
// *JOBPARM PSS=NO,F=1410,K=61
// EXEC COBUCLG
// IDENTIFICATION DIVISION.
// PROGRAM-ID. CREATE MATH-DEPT-STUD-DR.
// ENVIRONMENT DIVISION.
// INPUT-OUTPUT SECTION.
// FILE-CONTROL.
// SELECT MATH-DEPT-STUD-DB ASSIGN TO DA-3330-S-DISKMDR.
// DATA DIVISION.
// FILE SECTION.
// FD MATH-DEPT-STUD-DB LABEL RECORD IS STANDARD RECORDING MODE F
// DATA RECORD IS STUD-REC-M.
// 01 STUD-REC-M.
// 02 ATTEND-DATE PIC X(100).
// 02 MRR-DATE PIC X(70).
// 02 SSN PIC 9(09).
// 02 ADVISOR-NAME PIC X(18).
// 02 ADVISOR-SSN PIC 9(09).
// PROCEDURE DIVISION.
// OPEN OUTPUT MATH-DEPT-STUD-DR.
// MOVE SPACES TO STUD-REC-M.
// MOVE ZEROS TO SSN OF STUD-REC-M.
// WRITE STUD-REC-M.
// CLOSE MATH-DEPT-STUD-DB.
// STOP RUN.
// GO. DISKMDR DD DSN=FTU.OU.PI1770.MDB,
// SPACE=(TRK,(1,1)),
// DISP=(NEW,KEEP,CATLG),
// UNIT=DISK,VOL=SER=FTUPK1
//
//
//
//
//

```

X X X

LISTING OF DECK # 3  
(FOR CREATION OF MATH-DEPT-STUD-DB FILE)

```

//COMP698P JOB (1770,3376,NCLZ,FTU,5,5),ROGER SIFRIT,CLASS=B,
//
// MSGLEVEL=(1,1)
EXEC CORUCLG
IDENTIFICATION DIVISION.
PROGRAM-ID. CREATE STAT-HIST-DB.
ENVIRONMENT DIVISION.
INPUT-OUTPUT SECTION.
FILE-CONTROL
STAT-HIST-DB ASSIGN TO DA-3330-S-HISTDB.
DATA DIVISION.
FILE SECTION.
FD STAT-HIST-DB LABEL RECORD IS STANDARD RECORDING MODE IS F
DATA RECORD IS STAT-REC.
01 STAT-REC.
03 QTR PIC 9(03).
03 COMP-UG PIC 9(04).
03 COMP-GR PIC 9(04).
03 COMP-PH PIC 9(04).
03 MATH-UG PIC 9(04).
03 MATH-GR PIC 9(04).
03 MATH-PH PIC 9(04).
03 STAT-UG PIC 9(04).
PROCEDURE DIVISION.
OPEN OUTPUT STAT-HIST-DB.
MOVE ZEROS TO STAT-REC.
WRITE STAT-REC.
CLOSE STAT-HIST-DB.
STOP RUN.
//GO.HISTDB DD DSN=FTU.OU.PI770.HDR,
// DISP=(NEW,KEEP,CATLG),
// SPACE=(TRK,(1,1)),
// UNIT=DISK,VOL=SER=FTUPK1
//
//

```

LISTING OF DECK # 4

(FOR CREATION OF STAT-HIST-DB FILE)

(TEST DATA USED TO SIMULATE SPIN-OFF FILE ENTRIES)

LISTING OF DECK # 5a

```
***** SPIN-OFF TEST DATA *****
1111111111PETERSON OSCAR 417027114000M1
211111111199 BLUES STREET OVIDA FL998873057418523
311111111111 JAZZ BLVD NEW ORLEANS LA55555
4111111111 0000 0003 0408 0912 1315 1620 2125 2629 3036*****
4111223333***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1111223333JORGENSEN OSCAR 617907113991M2
1123456789JONES JOHN P 617907113888M1
4123456789***** 0003 0408 0912 1315 1620 2125 2629 3036*****
212345678944 SHIPWRECK WAY TAMPA FL325563057747532
312345678925 SHORE DRIVE SHEEPSHEAD BAY NY11112
1153283376SIFRIT ROGER WILLIAM 607017024000M2
21532833761298 ROYAL BIRKDALE ROCKLEDGE FL329553056310184
3153283376421 FORTH STREET FT LAUDERDALE FL33012
4153283376 0000 0005 0609 1013 1417 182112225*****
4222222222***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1222222222MANTIX KARL 317027012444M1
1222334444WASHINGTON GEORGE C 617907113998M1
4222334444***** 0003 0408 0912 1315 1620 2125 2629 3036*****
2222334444111 WASHINGTON AVE WASHINGTON DC767678007661976
32223344441600 PENN AVE WASHINGTON DC76776
4333333333***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1333333333SMITH BETTY JONES 317027113225F1
233333333312 SHORT STREET FLAG CITY FL333543056667856
333333333342 TEMPLE AVENUE TEMPLE TX68953
4333445555***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1333445555ZEWOCHOWSKI PETER ADRIAN 517907113555M2
244444444466 APPLE WAY APPLE OF EYE FL777883054442563
344444444466 APPLE WAY APPLE OF EYE FL77788
4444444444 0000 0003 0408***** 1315 1620***** 2629 3036*****
1444444444APPLETON MARY CARLTON 407017112888F1
4444556666***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1444556666SHOE-MACHER WILLIAM B 517907113885M2
4555555555***** 0003 0408***** 1620***** 2629 3036*****
15555555555IMMERMAN SETH ARNOLD 407017112333M1
4555667777***** 0003 0408 0912 1315 1620 2125 2629 3036*****
15556677777FELI LEE SHU 517907112999M1
4666666666***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1666666666BROWN ADOLPH RONALD 407017112555M1
1666778888CONROY MARY ELLEN 507017113999F1
3666778888112 JAMES STREET ORLANDO FL55542
2666778888112 JAMES STREET ORLANDO FL555423056689638
4666778888***** 0003 0408 0912 1315 1620 2125 2629 3036*****
4777777777***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1777777777BAXTER JOHN DENVER 607017113888M2
1777889999BAXTER JIMMY BUD 507017113985M1
377788999914 BRENT ROAD CHICAGO IL32564
4777889999***** 0912 1315 1620 2125 2629 3036*****
2777889999PFD 1 BUS STOP FL222333056669874
4888888888***** 0003 0408 0912 1315 1620 2125 2629 3036*****
1888888888ROSEY SAMUAL 607017113995M2
2888888888PFD 999 ORLANDO FL324563056668745
3888888888PFD 999 ORLANDO FL32456
4888999999***** 2125 2629 3036*****
1888999999REYNOLDS BURTRAND R 507017112555M1
288899999953 TOBACCO ROAD ORLANDO FL555443054442536
388899999966 CIGAR WAY HICK TOWN CA99999
2999999999555 FIFTH STREET ORLANDO FL123453053334444
1999999999BROWN JOSEPH DONALD 417017013222M1
3999999999666 SIXTH STREET DALLAS TX99999
4999999999***** 0002 0306 0406 071021114*****
```

AD-A052 628

FLORIDA TECHNOLOGICAL UNIV ORLANDO

**F/G 9/2**

DEMIS, AN INFORMATION SYSTEM TO SUPPORT EDUCATIONAL MANAGEMENT --ETC(U)

**JUN 76 R W SIFRIT**

**UNCLASSIFIED**

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IDENTIFICATION DIVISION.  
PROGRAM-ID. STUDENT INFORMATION SYSTEM.  
AUTHOR. ROGER W SIFRIT.  
INSTALLATION. FTU.  
DATE-WRITTEN. MARCH 31, 1976.  
DATE-COMPILED. JUN 3, 1976.  
SECURITY. THE REPORTS PRODUCED BY THIS PROGRAM CONTAIN  
INFORMATION WHICH IS PERSONAL IN NATURE.  
REMARKS.

00012 ENVIRONMENT DIVISION.  
00013 CONFIGURATION SECTION.  
00014 SOURCE-COMPUTER: IBM-360-65.  
00015 OBJECT-COMPUTER: IBM-360-65.  
00016 INPUT-OUTPUT SECTION.  
00017 FILE-CONTROL.  
00018 SELECT CARD-IN ASSIGN TO UT-S-READER.  
00019 SELECT PRINT-FILE ASSIGN TO UT-S-PROUT.  
00020 SELECT MATH-CHANGE ASSIGN TO UT-S-DISKCG.  
00021 SELECT SPIN-OFF ASSIGN TO DA-3330-S-DISKSP0.  
00022 SELECT STUD-DATA-BASE ASSIGN TO DA-3330-S-DISKSDR.  
00023 SELECT STAT-HIST-DR ASSIGN TO DA-3330-S-HISTDR.  
00024 SELECT MATH-DEPT-STUD-DR ASSIGN TO DA-3330-S-DISKMDR.  
00025 SELECT SORT-WORK-SDR ASSIGN TO DA-3330-S-SORTWK01.  
00026 SELECT SORT-WORK-HDR ASSIGN TO DA-3330-S-SORTWK01.  
00027 SELECT INPUT-SORT-FILE ASSIGN TO DA-3330-S-SORTWK01.  
00028 SELECT SORT-WORK-SPO ASSIGN TO DA-3330-S-SORTWK01.  
00029 SELECT MATH-REORG ASSIGN TO DA-3330-S-DISKMR.  
00030 SELECT HIST-REORG ASSIGN TO DA-3330-S-DISKHR.  
00031 I-O-CONTROL.  
00032 SAME SORT AREA FOR SORT-WORK-SDR SORT-WORK-HDR SORT-WORK-SPO  
00033 INPUT-SORT-FILE.

00035  
00036

DATA DIVISION.

00038

FILE SECTION.

00040 FD CARD-IN LABEL RECORD IS OMITTED RECORDING MODE IS F RECORD  
00041 CONTAINS 80 CHARACTERS  
00042 DATA RECORDS ARE CODE-CHECK,  
00043 FTU-ATTEND-Q, ALTER-STAT-HIST-H, ASSN-MBR-M, MBR-DELETE-X,  
00044 INDEX-4, BASIC-DATA-1, PARENTS-ADDRESS-3, STUD-ADDRESS-2,  
00045 FTU-ATTEND-DELETE-Z, YEAR-AND-QUARTER-Y, ADVISOR-V.  
00046 01 CODE-CHECK.  
00047 02 COOD PIC X(01).  
00048 02 REST PIC X(79).  
00049 01 FTU-ATTEND-Q.  
00050 02 FILLER PIC X(01).  
00051 02 SSN PIC 9(09).  
00052 02 ATTEND-DATA PIC X(70).  
00053 01 ALTER-STAT-HIST-H.  
00054 02 FILLER PIC X(01).  
00055 02 HIST-DATA.  
00056 03 QTR-H PIC 9(03).  
00057 03 COMP-UG PIC 9(04).  
00058 03 COMP-GR PIC 9(04).  
00059 03 COMP-PH PIC 9(04).  
00060 03 MATH-UG PIC 9(04).  
00061 03 MATH-GR PIC 9(04).  
00062 03 MATH-PH PIC 9(04).  
00063 03 STAT-UG PIC 9(04).  
00064 02 FILLER-H PIC X(48).  
00065 01 ASSN-MBR-M.  
00066 02 FILLER PIC X(01).  
00067 02 SSN PIC 9(09).  
00068 02 MBR-DATA PIC X(70).  
00069 01 MBR-DELETE-X.  
00070 02 FILLER PIC X(01).  
00071 02 SSN PIC 9(09).  
00072 02 ASSN-NAME PIC X(70).  
00073 01 INDEX-4.  
00074 02 FILLER PIC X(01).  
00075 02 SSN PIC 9(09).  
00076 02 INDEX-DATA PIC X(70).  
00077 01 BASIC-DATA-1.  
00078 02 FILLER PIC X(01).  
00079 02 SSN PIC 9(09).  
00080 02 LAST-NAME PIC X(18).  
00081 02 FRST-MDLE-NAME PIC X(30).  
00082 02 APPL-TYPE PIC 9(01).  
00083 02 MAJOR-1 PIC 9(04).  
00084 02 FTU-SUMMARY.  
00085 05 FTU-LAST-QTR PIC 9(03).  
00086 05 FTU-GPA PIC 9V999.  
00087 02 SEX PIC X(01).  
00088 02 MARITAL-STATUS PIC 9(01).  
00089 02 FILLER PIC X(08).

00090	01	PARENTS-ADDRESS-3.	
00091	02	FILLER	PIC X(01).
00092	02	SSN	PIC 9(09).
00093	02	KIN-STREET	PIC X(20).
00094	02	KIN-CITY	PIC X(20).
00095	02	KIN-STATE	PIC X(02).
00096	02	KIN-ZIP	PIC 9(05).
00097	02	FILLER	PIC X(23).
00098	01	STUD-ADDRESS-2.	
00099	02	FILLER	PIC X(01).
00100	02	SSN	PIC 9(09).
00101	02	HOME-STREET	PIC X(20).
00102	02	HOME-CITY	PIC X(20).
00103	02	HOME-STATE	PIC X(02).
00104	02	HOME-ZIP	PIC 9(05).
00105	02	HOME-PHONE	PIC 9(10).
00106	02	FILLER	PIC X(13).
00107	01	FTU-ATTEND-DELETE-Z.	
00108	02	FILLER	PIC X(01).
00109	02	SSN	PIC 9(09).
00110	02	ATTEND-DATA	PIC X(04).
00111	02	FILLER	PIC X(66).
00112	01	YEAR-AND-QUARTER-Y.	
00113	02	FILLER	PIC X(01).
00114	02	DATA-Y.	
00115	05	SCHOOL-YEAR	PIC 9(02).
00116	05	SCHOOL-QUARTER	PIC 9(01).
00117	02	FILLER-Y	PIC X(76).
00118	01	ADVISOR-V.	
00119	02	FILLER	PIC X(01).
00120	02	SSN	PIC 9(09).
00121	02	ADVISOR-NAME	PIC X(18).
00122	02	ADVISOR-SSN	PIC 9(09).
00123	02	FILLER	PIC X(43).
00125	FD	MATH-CHANGE LABEL RECORD IS STANDARD RECORDING MODE F	
00126		DATA RECORDS ARE CODE-CHECK-W, FTU-ATTEND-W, ASSN-MRR-W,	
00127		MRR-DELETE-W, FTU-ATTEND-DELETE-W, ADVISOR-W,	
00128		MATH-CHANGE-REC.	
00129	01	CODE-CHECK-W.	
00130	02	COWD	PIC X(01).
00131	02	REST-W	PIC X(79).
00132	01	FTU-ATTEND-W.	
00133	02	FILLER	PIC X(01).
00134	02	SSN	PIC 9(09).
00135	02	ATTEND-DATA	PIC X(70).
00136	01	ASSN-MRR-W.	
00137	02	FILLER	PIC X(01).
00138	02	SSN	PIC 9(09).
00139	02	MRR-DATA	PIC X(70).
00140	01	MRR-DELETE-W.	
00141	02	FILLER	PIC X(01).
00142	02	SSN	PIC 9(09).
00143	02	ASSN-NAME	PIC X(70).
00144	01	FTU-ATTEND-DELETE-W.	
00145	02	FILLER	PIC X(01).



00146		02 SSN	PIC 9(09).
00147		02 ATTEND-DATA	PIC X(04).
00148		02 FILLER	PIC X(66).
00149	01	ADVISOR-W.	
00150		02 FILLER	PIC X(01).
00151		02 SSN	PIC 9(09).
00152		02 ADVISOR-NAME	PIC X(18).
00153		02 ADVISOR-SSN	PIC 9(09).
00154		02 FILLER	PIC X(43).
00155	01	MATH-CHANGE-REC.	
00156		05 FILLER	PIC X(01).
00157		05 SSN	PIC 9(09).
00158		05 FILLER	PIC X(70).

00160	FD	STUD-DATA-BASE LABEL RECORD IS STANDARD RECORDING MODE IS F	
00161		DATA RECORD IS STUD-DB-REC.	
00162	01	STUD-DB-REC.	
00163		02 LAST-NAME	PIC X(18).
00164		02 FRST-MDLE-NAME	PIC X(30).
00165		02 SSN	PIC 9(09).
00166		02 GRAD-UG-PB	PIC X(01).
00167		02 MAJOR	PIC X(04).
00168		02 GPA	PIC 9V999.
00169		02 SEX	PIC X(01).
00170		02 GRAD	PIC X(01).
00171		02 FTU-LAST-QTR	PIC 9(03).
00172		02 HOME-STREET	PIC X(20).
00173		02 HOME-CITY	PIC X(20).
00174		02 HOME-STATE	PIC X(02).
00175		02 HOME-ZIP	PIC X(05).
00176		02 HOME-PHONE	PIC X(10).
00177		02 KIN-STREET	PIC X(20).
00178		02 KIN-CITY	PIC X(20).
00179		02 KIN-STATE	PIC X(02).
00180		02 KIN-ZIP	PIC X(05).
00181		02 MARITAL-STATUS	PIC X(01).
00182		02 ATTEND-DATA	PIC X(70).
00183		02 MBR-DATA	PIC X(70).
00184		02 ADVISOR-NAME	PIC X(18).
00185		02 ADVISOR-SSN	PIC 9(09).

00187	FD	PRINT-FILE LABEL RECORDS OMITTED DATA RECORD IS PRINT-LINE.	
00188	01	PRINT-LINE	PIC X(133).

00190	FD	SPIN-OFF LABEL RECORD IS STANDARD RECORDING MODE IS F	
00191		DATA RECORD IS SPIN-OFF-REC.	
00192	01	SPIN-OFF-REC.	
00193		02 LAST-NAME	PIC X(18).
00194		02 FRST-MDLE-NAME	PIC X(30).
00195		02 SSN	PIC 9(09).
00196		02 APPL-TYPE	PIC 9(01).
00197		02 MAJOR-1	PIC 9(04).
00198		02 FTU-SUMMARY.	
00199		05 FTU-LAST-QTR	PIC 9(03).



00200		05 FTU-GPA	PIC 9V999.
00201	02	SFX	PIC X(01).
00202	02	INDX	PIC X(200).
00203		05 GRD-IND	PIC X(01).
00204		05 START-SUR	PIC X(02).
00205		05 END-SUR	PIC X(02).
00206	02	HOME-STREET	PIC X(20).
00207	02	HOME-CITY	PIC X(20).
00208	02	HOME-STATE	PIC X(02).
00209	02	HOME-ZIP	PIC X(05).
00210	02	HOME-PHONE	PIC X(10).
00211	02	KIN-STREET	PIC X(20).
00212	02	KIN-CITY	PIC X(20).
00213	02	KIN-STATE	PIC X(02).
00214	02	KIN-ZIP	PIC 9(05).
00215	02	MARITAL-STATUS	PIC X(01).

00217	FD	STAT-HIST-DB LABEL RECORD IS STANDARD RECORDING MODE IS F	
00218		DATA RECORD IS STAT-REC.	
00219	01	STAT-REC.	
00220	03	QTR	PIC 9(03).
00221	03	COMP-UG	PIC 9(04).
00222	03	COMP-GR	PIC 9(04).
00223	03	COMP-PB	PIC 9(04).
00224	03	MATH-UG	PIC 9(04).
00225	03	MATH-GR	PIC 9(04).
00226	03	MATH-PB	PIC 9(04).
00227	03	STAT-UG	PIC 9(04).

00229	SD	SORT-WORK-SDB RECORDING MODE IS F DATA RECORD IS	
00230		SORT-SDB-REC.	
00231	01	SORT-SDB-REC.	
00232	02	LAST-NAME	PIC X(18).
00233	02	FRST-MDLE-NAME	PIC X(30).
00234	02	SSN	PIC 9(09).
00235	02	GRAD-UG-PB	PIC X(01).
00236	02	MAJOR	PIC X(04).
00237	02	FTU-GPA	PIC 9V999.
00238	02	SEX	PIC X(01).
00239	02	GRAD	PIC X(01).
00240	02	FTU-LAST-QTR	PIC 9(03).
00241	02	HOME-STREET	PIC X(20).
00242	02	HOME-CITY	PIC X(20).
00243	02	HOME-STATE	PIC X(02).
00244	02	HOME-ZIP	PIC X(05).
00245	02	HOME-PHONE	PIC X(10).
00246	02	KIN-STREET	PIC X(20).
00247	02	KIN-CITY	PIC X(20).
00248	02	KIN-STATE	PIC X(02).
00249	02	KIN-ZIP	PIC X(05).
00250	02	MARITAL-STATUS	PIC X(01).
00251	02	ATTEND-DATA	PIC X(70).
00252	02	MBR-DATA	PIC X(70).
00253	02	ADVISOR-NAME	PIC X(18).
00254	02	ADVISOR-SSN	PIC 9(09).

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00256 FD MATH-DEPT-STUD-DB LABEL RECORD IS STANDARD RECORDING MODE F
00257 DATA RECORD IS STUD-REC-M.
00258 01 STUD-REC-M.
00259 02 ATTEND-DATA PIC X(100).
00260 02 MMR-DATA PIC X(70).
00261 02 SSN PIC 9(09).
00262 02 ADVISOR-NAME PIC X(18).
00263 02 ADVISOR-SSN PIC 9(09).

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00265 FD HIST-REORG LABEL RECORD IS STANDARD DATA RECORD IS
00266 HIST-REORG-REC.
00267 01 HIST-REORG-REC.
00268 03 QTR PIC 9(03).
00269 03 COMP-UG PIC 9(04).
00270 03 COMP-GR PIC 9(04).
00271 03 COMP-PB PIC 9(04).
00272 03 MATH-UG PIC 9(04).
00273 03 MATH-GR PIC 9(04).
00274 03 MATH-PB PIC 9(04).
00275 03 STAT-UG PIC 9(04).

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00277 SD INPUT-SORT-FILE RECORDING MODE F DATA RECORD IS
00278 INPUT-SORT.
00279 01 INPUT-SORT.
00280 05 FILLER PIC X(01).
00281 05 SSN PIC 9(09).
00282 05 FILLER PIC X(70).

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00284 SD SORT-WORK-HDB RECORDING MODE F DATA RECORD IS
00285 SORT-HDB-REC.
00286 01 SORT-HDB-REC.
00287 03 QTR PIC 9(03).
00288 03 COMP-UG PIC 9(04).
00289 03 COMP-GR PIC 9(04).
00290 03 COMP-PB PIC 9(04).
00291 03 MATH-UG PIC 9(04).
00292 03 MATH-GR PIC 9(04).
00293 03 MATH-PB PIC 9(04).
00294 03 STAT-UG PIC 9(04).

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00296 SD SORT-WORK-SPO RECORDING MODE IS F DATA RECORD IS
00297 SORT-SPO-REC.
00298 01 SORT-SPO-REC.
00299 02 LAST-NAME PIC X(18).
00300 02 FRST-MDLE-NAME PIC X(30).
00301 02 SSN PIC 9(09).
00302 02 APPL-TYPE PIC 9(01).
00303 02 MAJOR-I PIC 9(04).
00304 02 FTU-SUMMARY.
00305 05 FTU-LAST-QTR PIC 9(03).
00306 05 FTU-GPA PIC 9V999.

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00307	02	SEX	PIC	X(01).
00308	02	INDX	PIC	X(200).
00309	*	05 GRD-IND	PIC	X(01).
00310	*	05 START-SUB	PIC	X(02).
00311		05 END-SUB	PIC	X(02).
00312	02	HOME-STREET	PIC	X(20).
00313	02	HOME-CITY	PIC	X(20).
00314	02	HOME-STATE	PIC	X(02).
00315	02	HOME-ZIP	PIC	9(05).
00316	02	HOME-PHONE	PIC	9(10).
00317	02	KIN-STREET	PIC	X(20).
00318	02	KIN-CITY	PIC	X(20).
00319	02	KIN-STATE	PIC	X(02).
00320	02	KIN-ZIP	PIC	9(05).
00321	02	MARITAL-STATUS	PIC	X(01).

00323	FD	MATH-REORG LABEL RECORD IS	STANDARD DATA RECORD IS
00324		MATH-REORG-REC.	
00325	01	MATH-REORG-REC.	
00326		02 ATTEND-DATA	PIC X(100).
00327		02 MBR-DATA	PIC X(70).
00328		02 SSN	PIC 9(09).
00329		02 ADVISOR-NAME	PIC X(18).
00330		02 ADVISOR-SSN	PIC 9(09).
00331			
00332			

00334	WORKING-STORAGE SECTION.		
00335	77	FRR-MSG-LINE	PIC X(133) VALUE SPACES.
00336	77	WORK-AREA1	PIC X(133).
00337	77	WORK-AREA2	PIC X(133).
00338	77	CURRENT-QTR-CODE	PIC 9(02).
00339	77	CURRENT-QTR	PIC 9(03).
00340	77	CTR	PIC 9(10).
00341	77	PTR	PIC 9(10).
00342	77	MATH-CHANGE-MADE	PIC X(01) VALUE 'Y'.
00343	77	SUBSCRIPT	PIC 9(10) VALUE IS ZERO, USAGE COMP.
00344	77	HEADINGS	PIC X(20).
00345	77	OUTPUT-FORMAT	PIC X(20).
00346	77	BREAK	PIC X(20).
00347	77	DATE-BUFF	PIC X(06).
00348	*	YYMMDD	
00349	77	TEMP	PIC X(20).
00350	77	ERROR-WARNING	PIC X(18) VALUE '*** ERROR WARNING:'.
00351	77	BREAK-STATUS	PIC X(03) VALUE 'NO'.
00352	77	KODE	PIC X(01) VALUE SPACES.
00353	77	BREAK-1	PIC X(04).
00354	77	BREAK-2	PIC X(01).
00355	77	BREAK-3	PIC 9(09).
00356	77	VALIDITY-INDICATOR	PIC X(07).
00357	77	SSNUM	PIC 9(09).
00358	77	QTR-BUFF	PIC 9(03) VALUE ZEROS.
00359	77	DELETE-CHAR	PIC X(01) VALUE SPACES.
00360	01	RECORD-BUFF.	
00361		02 ATTEND-DATA	PIC X(100).

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00362      02 MBR-DATA          PIC X(70).
00363      02 SSN                PIC 9(09).
00364      02 ADVISOR-NAME       PIC X(18).
00365      02 ADVISOR-SSN       PIC 9(09).
00366
00367      01 FTU-LAST-QTR-EDIT.
00368      05 LAST-YR-ATT-EDIT    PIC 9(02).
00369      05 FILLER              PIC X(01).
00370      01 ACCUMULATORS.
00371      03 COMP-UG             PIC 9(04) VALUE ZERO.
00372      03 COMP-GR             PIC 9(04) VALUE ZERO.
00373      03 COMP-PB             PIC 9(04) VALUE ZERO.
00374      03 COMPTOT            PIC 9(04) VALUE ZERO.
00375      03 MATH-UG            PIC 9(04) VALUE ZERO.
00376      03 MATH-GR            PIC 9(04) VALUE ZERO.
00377      03 MATH-PB            PIC 9(04) VALUE ZERO.
00378      03 MATHTOT            PIC 9(04) VALUE ZERO.
00379      03 STAT-UG            PIC 9(04) VALUE ZERO.
00380      03 STATTOT            PIC 9(04) VALUE ZERO.
00381      03 TOTSTUDS           PIC 9(04) VALUE ZERO.
00382      01 FORMER-STUD-HEAD.
00383      05 FILLER              PIC X(39) VALUE SPACES.
00384      05 FILLER              PIC X(56) VALUE 'NOT CURRENTLY ENROLLE
00385      - 'D BUT LISTED IN MATH DEPT DATA BASE'.
00386      05 FILLER              PIC X(38) VALUE SPACES.
00387      01 INDEX-CONVERT.
00388      05 INDEX-DATA          PIC X(70).
00389      05 FILLER              PIC X(130) VALUE *****
00390      - *****!
00391      01 ATTEND-ARRAY         PIC X(120).
00392      01 ATTEND-TAB REDEFINES ATTEND-ARRAY.
00393      02 QTR-ATTEND          PIC X(04) OCCURS 30 INDEXED BY Q.
00394      01 MBR-TAB-FIELD       PIC X(100).
00395      01 MBR-TAB REDEFINES MBR-TAB-FIELD.
00396      02 MBR                 PIC X(10) OCCURS 10 INDEXED BY M.
00397      01 RECORD-CHANGE.
00398      02 FILLER              PIC X(14) VALUE ' STUDENT SSN: '.
00399      02 SSN                 PIC 9(09).
00400      02 FILLER              PIC X(16) VALUE ' FIELD CHANGED: '.
00401      02 FIELD-CHANGED       PIC X(12).
00402      02 NEW-DATA            PIC X(82).
00403      01 STUD-REC-TEMP.
00404      02 ATTEND-DATA          PIC X(80) VALUE SPACES.
00405      02 MBR-DATA            PIC X(70) VALUE SPACES.
00406      02 SSN                 PIC 9(09) VALUE ZEROS.
00407      02 ADVISOR-NAME        PIC X(18) VALUE SPACES.
00408      02 ADVISOR-SSN         PIC 9(09) VALUE ZEROS.
00409      01 TODAYS-DATE.
00410      02 CURRENT-DAYT.
00411      05 YY                 PIC 9(02).
00412      05 MM                 PIC 9(02).
00413      05 DD                 PIC 9(02).
00414      01 MONTH-TAB-DATA      PIC X(36) VALUE 'JANFERMARAPR MAYJUNJUL
00415      - 'AUGSEP OCTNOVDEC'.
00416      01 MONTH-TAB REDEFINES MONTH-TAB-DATA.
00417      02 MONTH-ALPHA         PIC X(03) OCCURS 12 TIMES.
00418      01 DATE-IN-PRINT-FORM.

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00419	02	MONTH	PIC X(03).	
00420	02	FILLER	PIC X(01) VALUE SPACES.	
00421	02	DD	PIC 9(02).	
00422	02	FILLER	PIC X(03) VALUE ' 19'.	
00423	02	YY	PIC 9(02).	
00424				
00425	01	QTR-CONVERT-TAB.		
00426	05	FILLER	PIC X(78) VALUE '69169269369470170270	
00427	-	'3704711712713714721722723724731732733734741742743744751752'	PIC X(60) VALUE	'75
00428	05	FILLER	PIC X(60) VALUE	'80
00429	-	'3754761762763764771772773774781782783784791792793794801802'	PIC X(60) VALUE	'85
00430	05	FILLER	PIC X(60) VALUE	'80
00431	-	'3804811812813814821822823824831832833834841842843844851852'	PIC X(60) VALUE	'85
00432	05	FILLER	PIC X(60) VALUE	'85
00433	-	'3854861862863864871872873874881882883884891892893894901902'	PIC X(06) VALUE '903904'	
00434	05	FILLER	PIC X(06) VALUE '903904'	
00435	01	QTR-TAB REDEFINES QTR-CONVERT-TAB.		
00436	02	YR-QTR OCCURS 88 TIMES INDEXED BY YQ.		
00437	05	QTR	PIC 9(03).	
00438	01	INDEX-ARRAY-LOAD-FIELD	PIC X(200).	
00439	01	INDEX-ARRAY REDEFINES INDEX-ARRAY-LOAD-FIELD.		
00440	02	INDEX-ENTRY OCCURS 40 TIMES.		
00441	05	GRD-IND	PIC 9(01).	
00442	05	START-SUB	PIC 9(02).	
00443	05	END-SUB	PIC 9(02).	
00444	01	PAGE-HEAD-DEPT.		
00445	05	FILLER	PIC X(49) VALUE SPACES.	
00446	05	FILLER	PIC X(35) VALUE 'DEPARTMENT OF MATHEMA	
00447	-	'TICAL SCIENCES'.		
00448	05	FILLER	PIC X(49) VALUE SPACES.	
00449	01	TITLE-ROST.		
00450	05	FILLER	PIC X(44) VALUE SPACES.	
00451	05	TITLE-LINE	PIC X(46).	
00452	05	FILLER	PIC X(43) VALUE SPACES.	
00453	01	STUD-STAT-HEAD.		
00454	05	FILLER	PIC X(58) VALUE SPACES.	
00455	05	FILLER	PIC X(18) VALUE 'STUDENT ENROLLMENT'.	
00456	05	FILLER	PIC X(57) VALUE SPACES.	
00457	01	DATE-HEAD.		
00458	05	FILLER	PIC X(61) VALUE SPACES.	
00459	05	DATE-OUT	PIC X(11).	
00460	05	FILLER	PIC X(61) VALUE SPACES.	
00461	01	STUD-STAT-COL-HEAD.		
00462	05	FILLER	PIC X(56) VALUE SPACES.	
00463	05	FILLER	PIC X(19) VALUE 'COMP	MATH
00464	05	FILLER	PIC X(16) VALUE ' STAT	TOTAL'.
00465	05	FILLER	PIC X(42) VALUE SPACES.	
00466	01	STUD-STAT-UNGRAD.		
00467	05	FILLER	PIC X(41) VALUE SPACES.	
00468	05	FILLER	PIC X(15) VALUE 'UNDERGRADUATE	'.
00469	05	COMP-UG	PIC ZZZ9 VALUE ZEROS.	
00470	05	FILLER	PIC X(06) VALUE SPACES.	
00471	05	MATH-UG	PIC ZZZ9 VALUE ZEROS.	
00472	05	FILLER	PIC X(06) VALUE SPACES.	
00473	05	STAT-UG	PIC ZZZ9 VALUE ZEROS.	
00474	05	FILLER	PIC X(06) VALUE SPACES.	
00475	05	TOT-UG	PIC ZZZZ9 VALUE ZEROS.	



00476		05 FILLER	PIC X(42) VALUE SPACES.	
00477	01	STUD-STAT-GRAD.		
00478		05 FILLER	PIC X(41) VALUE SPACES.	
00479		05 FILLER	PIC X(15) VALUE 'GRADUATE	'.
00480		05 COMP-GR	PIC ZZZ9 VALUE ZEROS.	
00481		05 FILLER	PIC X(06) VALUE SPACES.	
00482		05 MATH-GR	PIC ZZZ9 VALUE ZEROS.	
00483		05 FILLER	PIC X(16) VALUE SPACES.	
00484		05 TOT-GR	PIC ZZZZ9 VALUE ZEROS.	
00485		05 FILLER	PIC X(42) VALUE SPACES.	
00486	01	STUD-STAT-TOT.		
00487		05 FILLER	PIC X(41) VALUE SPACES.	
00488		05 FILLER	PIC X(15) VALUE 'TOTAL	'.
00489		05 COMPTOT	PIC ZZZ9 VALUE ZEROS.	
00490		05 FILLER	PIC X(06) VALUE SPACES.	
00491		05 MATHTOT	PIC ZZZ9 VALUE ZEROS.	
00492		05 FILLER	PIC X(06) VALUE SPACES.	
00493		05 STATTOT	PIC ZZZ9 VALUE ZEROS.	
00494		05 FILLER	PIC X(07) VALUE SPACES.	
00495		05 TOTSTUDS	PIC ZZZ9 VALUE ZEROS.	
00496		05 FILLER	PIC X(42) VALUE SPACES.	
00497	01	STUD-STAT-POST-BAC.		
00498		05 FILLER	PIC X(41) VALUE SPACES.	
00499		05 FILLER	PIC X(15) VALUE 'POST BAC	'.
00500		05 COMP-PB	PIC ZZZ9 VALUE ZEROS.	
00501		05 FILLER	PIC X(06) VALUE SPACES.	
00502		05 MATH-PB	PIC ZZZ9 VALUE ZEROS.	
00503		05 FILLER	PIC X(16) VALUE SPACES.	
00504		05 TOT-PB	PIC ZZZZ9 VALUE ZEROS.	
00505		05 FILLER	PIC X(42) VALUE SPACES.	
00506	01	ABRR-NAME.		
00507		05 LAST-NAME	PIC X(15).	
00508		05 FRST-MDLE-NAME	PIC X(10).	
00509	01	FAC-ADV-HEAD.		
00510		05 FILLER	PIC X(55) VALUE SPACES.	
00511		05 FILLER	PIC X(16) VALUE 'FACULTY ADVISOR	'.
00512		05 FILLER	PIC X(07) VALUE 'LISTING'.	
00513		05 FILLER	PIC X(55) VALUE SPACES.	
00514	01	FAC-ADV-COL-HEAD.		
00515		05 FILLER	PIC X(47) VALUE SPACES.	
00516		05 FILLER	PIC X(07) VALUE 'STUDENT'.	
00517		05 FILLER	PIC X(21) VALUE SPACES.	
00518		05 FILLER	PIC X(15) VALUE 'FACULTY ADVISOR'.	
00519		05 FILLER	PIC X(43) VALUE SPACES.	
00520	01	FAC-ADV-DET-LINE.		
00521		05 FILLER	PIC X(42) VALUE SPACES.	
00522		05 NAME	PIC X(25).	
00523		05 FILLER	PIC X(07) VALUE SPACES.	
00524		05 ADVISOR-NAME	PIC X(18).	
00525		05 FILLER	PIC X(41) VALUE SPACES.	
00526	01	ADVISEE-HEAD.		
00527		05 FILLER	PIC X(10) VALUE SPACES.	
00528		05 FILLER	PIC X(45) VALUE 'THE FOLLOWING NAMED S	
00529	-	'TUDENTS ARE ADVISEES OF		'.
00530		05 ADVISOR-NAME	PIC X(18).	
00531		05 FILLER	PIC X(60) VALUE SPACES.	
00532	01	ADVISEE-HEAD-ALT.		

00533	05	FILLER	PIC X(10) VALUE SPACES.
00534	05	FILLER	PIC X(73) VALUE 'THE FOLLOWING NAMED S
00535	-	'STUDENTS ARE ADVISEES OF THE FACULTY MEMBER INDICATED'.	
00536	05	FILLER	PIC X(50) VALUE SPACES.
00537	01	CURRENT-QTR-PRINT.	
00538	05	FILLER	PIC X(65) VALUE SPACES.
00539	05	QTR-PRINT	PIC X(03) VALUE SPACES.
00540	05	FILLER	PIC X(65) VALUE SPACES.
00541	01	NAME-LINE.	
00542	05	FILLER	PIC X(01) VALUE SPACES.
00543	05	LAST-NAME	PIC X(18).
00544	05	FRST-MDLE-NAME	PIC X(30).
00545	05	FILLER	PIC X(01) VALUE SPACES.
00546	05	SSN	PIC 999899899998.
00547	05	GRAD-UG-PB	PIC X(01).
00548	05	FILLER	PIC X(01) VALUE '- '.
00549	05	MAJOR	PIC X(04).
00550	05	FILLER	PIC X(01) VALUE SPACES.
00551	05	FTU-LAST-QTR.	
00552	06	LAST-YR-ATT	PIC 9(02).
00553	06	LAST-QTR-ATT	PIC X(01).
00554	05	FILLER	PIC X(01) VALUE ' / '.
00555	05	GPA	PIC 9.999.
00556	05	FILLER	PIC X(10) VALUE ' ADVISOR: '.
00557	05	ADVISOR-NAME	PIC X(18).
00558	05	FILLER	PIC X(06) VALUE ' SEX: '.
00559	05	SEX	PIC X(01).
00560	05	FILLER	PIC X(01) VALUE SPACES.
00561	05	FILLER	PIC X(12) VALUE ' MARITAL ST: '.
00562	05	MARITAL-STATUS	PIC X(01).
00563	05	FILLER	PIC X(04) VALUE ' GR: '.
00564	05	GRAD	PIC X(01).
00565	01	ADDR-LINE.	
00566	05	FILLER	PIC X(18) VALUE ' ADDRESS: '.
00567	05	FILLER	PIC X(02) VALUE SPACES.
00568	05	HOME-STREET	PIC X(20).
00569	05	FILLER	PIC X(01) VALUE SPACES.
00570	05	HOME-CITY	PIC X(20).
00571	05	HOME-STATE	PIC RXXR.
00572	05	HOME-ZIP	PIC X(05).
00573	05	FILLER	PIC X(12) VALUE ' LOCAL TEL: '.
00574	05	HOME-PHONE	PIC XXXRXXXRXXXX.
00575	05	FILLER	PIC X(08) VALUE ' MEMBR: '.
00576	05	MBR-DATA	PIC X(31).
00577	01	ADDR-PARENT-LINE.	
00578	05	FILLER	PIC X(15) VALUE SPACES.
00579	05	FILLER	PIC X(08) VALUE ' PARENT: '.
00580	05	KIN-STREET	PIC X(20).
00581	05	FILLER	PIC X(01) VALUE SPACES.
00582	05	KIN-CITY	PIC X(20).
00583	05	KIN-STATE	PIC RXXR.
00584	05	KIN-ZIP	PIC X(05).
00585	05	FILLER	PIC X(63) VALUE SPACES.
00586			
00587	01	FTU-ATTN-LINE.	
00588	05	FILLER	PIC X(35) VALUE ' QTRS ATTENDE
00589	-	'D FTU/STATUS: '.	

00590		05 ATTEND-DATA	PIC X(70).
00591	01	WARNING-MSG.	
00592		05 FILLER	PIC X(40) VALUE ' * WARNING: INPUT CAR
00593	-	'D NOT PROCESSED *'.	
00594		05 FILLER	PIC X(95) VALUE SPACES.
00595	01	ADVISEE-DET-LINE.	
00596		05 FILLER	PIC X(10) VALUE SPACES.
00597		05 NAME	PIC X(25).
00598		05 FILLER	PIC X(98) VALUE SPACES.

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00600 ***** REFERENCE HIPO 2.0 *****
00601 PROCEDURE DIVISION.
00602 PERFORM ACCEPT-DATE-FROM-SYSTEM.
00603 OPEN INPUT CARD-IN.
00604 READ CARD-IN AT END GO TO EOJ.
00605 PERFORM LOAD-CURRENT-QTR-DATA.
00606 IF CODE = 'T' GO TO EOJ.
00607 READ CARD-IN AT END GO TO EOJ.
00608 PERFORM LOAD-FTU-DATA THRU END-FTU-DATA-SECTION.
00609 READ-CARD-LOOP.
00610 READ CARD-IN AT END GO TO EOJ.
00611 PERFORM CARD-FORMAT-VERIFY.
00612 IF VALIDITY-INDICATOR = 'INVALID' GO TO READ-CARD-LOOP.
00613 IF COOD = 'R' OR 'F' OR 'A' OR 'C'
00614 PERFORM GENERATE-REPORTS, MOVE 'N' TO MATH-CHANGE-MADE.
00615 IF COOD = 'H' PERFORM MATH-LOAD-UPDATE.
00616 IF COOD = 'V' OR 'Q' OR 'Z' OR 'M' OR 'X' OR 'D'
00617 MOVE 'Y' TO MATH-CHANGE-MADE
00618 PERFORM LOAD-MATH-CHANGE-FILE THRU
00619 END-LOAD-MATH-CHANGE-FILE.
00620 PERFORM MATH-LOAD-UPDATE.
00621 GO TO READ-CARD-LOOP.
00622 EOJ.
00623 CLOSE CARD-IN.
00624 STOP RUN.

00626 ACCEPT-DATE-FROM-SYSTEM.
00627 ACCEPT CURRENT-DAYT FROM DATE.
00628 MOVE DD OF CURRENT-DAYT TO DD OF DATE-IN-PRINT-FORM.
00629 MOVE YY OF CURRENT-DAYT TO YY OF DATE-IN-PRINT-FORM.
00630 MOVE MONTH-ALPHA (MM OF CURRENT-DAYT) TO MONTH OF
00631 DATE-IN-PRINT-FORM.
00632 MOVE DATE-IN-PRINT-FORM TO DATE-OUT OF DATE-HEAD.

00634 LOAD-CURRENT-QTR-DATA.
00635 IF COOD IS NOT EQUAL TO 'Y' THEN
00636 MOVE ' **MISSING OR OUT OF SEQUENCE CURRENT QUARTER CARD P
00637 - 'ROCESSING TERMINATING.' TO ERR-MSG-LINE
00638 PERFORM INVALID-INPUT
00639 MOVE 'T' TO CODE
00640 GO TO END-CURRENT-QTR-DATA.
00641 MOVE DATA-Y TO CURRENT-QTR.
00642 SET YQ TO 1.
00643 MOVE 1 TO PTR.
00644 SEARCH YR-QTR VARYING PTR
00645 AT END MOVE ' * INVALID CURRENT QUARTER SPECIFIED ON INPUT
00646 - 'CARD - PROCESSING TERMINATING.' TO ERR-MSG-LINE
00647 PERFORM INVALID-INPUT
00648 MOVE 'T' TO CODE
00649 GO TO END-CURRENT-QTR-DATA
00650 WHEN CURRENT-QTR IS EQUAL TO YR-QTR (YQ)
00651 MOVE PTR TO CURRENT-QTR-CODE.
00652 OPEN OUTPUT PRINT-FILE.
00653 MOVE SPACES TO PRINT-LINE.
00654 WRITE PRINT-LINE FROM CURRENT-QTR-CODE AFTER POSITIONING 3

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00655  
00656  
00657

LINES.  
CLOSE PRINT-FILE.  
END-CURRENT-QTR-DATA. EXIT.



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00659      INVALID-INPUT SECTION.  
00660      OPEN OUTPUT PRINT-FILE.  
00661      WRITE PRINT-LINE FROM ERROR-WARNING  
00662      AFTER POSITIONING 3 LINES.  
00663      WRITE PRINT-LINE FROM ERR-MSG-LINE  
00664      AFTER POSITIONING 2 LINES.  
00665      MOVE SPACES TO ERR-MSG-LINE.  
00666      STRING ' THE FOLLOWING INPUT CARD DISREGARDED: ' CODE-CHECK  
00667      DELIMITED BY SIZE  
00668      INTO ERR-MSG-LINE.  
00669      WRITE PRINT-LINE FROM ERR-MSG-LINE  
00670      AFTER POSITIONING 2 LINES.  
00671      MOVE SPACES TO ERR-MSG-LINE.  
00672      CLOSE PRINT-FILE.
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00674 CARD-FORMAT-VERIFY SECTION.
00675 REPORT-REQUEST.
00676     MOVE 'VALID' TO VALIDITY-INDICATOR.
00677     IF COOD = 'R' OR 'F' OR 'A' OR 'C'
00678     THEN IF REST IS NOT EQUAL TO SPACES THEN
00679     MOVE 'ILLEGAL ENTRY ON REPORT REQUEST' TO ERR-MSG-LINE
00680     PERFORM INVALID-INPUT
00681     MOVE 'INVALID' TO VALIDITY-INDICATOR.
00682     IF COOD = 'H'
00683     THEN IF HIST-DATA IS NOT NUMERIC OR FILLER-H IS NOT = ' '
00684     MOVE 'ILLEGAL ENTRY ON HISTORY ALTERATION REQUEST'
00685     TO ERR-MSG-LINE
00686     PERFORM INVALID-INPUT
00687     MOVE 'INVALID' TO VALIDITY-INDICATOR.
00688     IF COOD = 'Y'
00689     THEN IF DATA-Y IS NOT NUMERIC OR FILLER-Y IS NOT = ' '
00690     MOVE 'ILLEGAL ENTRY ON YEAR AND QUARTER INPUT CARD'
00691     TO ERR-MSG-LINE
00692     PERFORM INVALID-INPUT
00693     MOVE 'INVALID' TO VALIDITY-INDICATOR.
00694     IF COOD = '1' OR '2' OR '3' OR '4' OR 'V' OR 'Q' OR 'D'
00695     OR 'Z' OR 'M' OR 'X'
00696     THEN IF SSN OF BASIC-DATA-1 IS NOT NUMERIC THEN
00697     MOVE 'INVALID SSN ON INPUT CARD' TO ERR-MSG-LINE
00698     PERFORM INVALID-INPUT
00699     MOVE 'INVALID' TO VALIDITY-INDICATOR.
00700     IF COOD = 'V'
00701     THEN IF ADVISOR-NAME OF ADVISOR-V IS NOT ALPHABETIC
00702     OR ADVISOR-SSN OF ADVISOR-V IS NOT NUMERIC
00703     MOVE 'ILLEGAL INPUT ON ADVISOR INPUT CARD' TO
00704     ERR-MSG-LINE
00705     PERFORM INVALID-INPUT
00706     MOVE 'INVALID' TO VALIDITY-INDICATOR.
00707     IF COOD = '*' GO TO END-VERIFY.
00708     IF COOD IS NOT EQUAL TO 'R' AND 'F' AND 'A' AND 'C' AND 'H'
00709     AND 'Y' AND '1' AND '2' AND '3' AND '4' AND 'V' AND 'Q'
00710     AND 'D' AND 'Z' AND 'M' AND 'X' THEN
00711     MOVE 'INVALID' TO VALIDITY-INDICATOR
00712     MOVE 'INVALID CODE IN COLUMN 1 OF INPUT CARD' TO
00713     ERR-MSG-LINE
00714     PERFORM INVALID-INPUT.
00715 END-VERIFY.

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00717 LOAD-MATH-CHANGE-FILE SECTION.
00718 OPEN OUTPUT MATH-CHANGE.
00719 READ-INTO-MATH-CHANGE.
00720 MOVE SPACES TO CODE-CHECK-W.
00721 MOVE CODE-CHECK TO CODE-CHECK-W.
00722 WRITE CODE-CHECK-W.
00723 READ-CHANGE.
00724 READ CARD-IN AT END GO TO END-LOAD-MATH-CHANGE-FILE.
00725 PERFORM CARD-FORMAT-VERIFY.
00726 IF VALIDITY-INDICATOR = 'INVALID' GO TO
00727 READ-CHANGE.
00728 IF COOD IS EQUAL TO 'V' OR 'Q' OR 'Z' OR 'M' OR 'X' OR 'D'
00729 THEN GO TO READ-INTO-MATH-CHANGE.
00730 IF COOD IS NOT EQUAL TO '*'
00731 THEN OPEN OUTPUT PRINT-FILE
00732 MOVE ' * EXPECTED TO FIND * AT END OF MATH CHANGE
00733 - 'CARD INPUT - FOUND INSTEAD THE FOLLOWING DATA WHICH IS DISPE
00734 - 'GARDER: ' - TO PRINT-LINE
00735 WRITE PRINT-LINE AFTER POSITIONING 2 LINES
00736 STRING ' * CARD IMAGE: ' CODE-CHECK DELIMITED BY SIZE
00737 INTO PRINT-LINE
00738 WRITE PRINT-LINE AFTER POSITIONING 2 LINES
00739 CLOSE PRINT-FILE.
00740 CLOSE MATH-CHANGE.
00741 MOVE 102400 TO SORT-CORE-SIZE
00742 SORT INPUT-SORT-FILE
00743 ASCENDING KEY SSN OF INPUT-SORT
00744 USING MATH-CHANGE
00745 GIVING MATH-CHANGE.
00746 END-LOAD-MATH-CHANGE-FILE. EXIT.

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00748 ***** REFERENCE HIPO 2.1 *****
00749 MATH-LOAD-UPDATE SECTION.
00750 IF COOD = 'H' THEN PERFORM STAT-HIST THRU EXIT-STAT-HIST
00751 ELSE PERFORM MERGE-MATH-DATA THRU END-MERGE-MATH-DATA.
00752 GO TO END-MATH-LOAD-UPDATE-SECTION.

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00754 MERGE-MATH-DATA.
00755 OPEN I-O MATH-DEPT-STUD-DB.
00756 OPEN INPUT MATH-CHANGE.
00757 OPEN OUTPUT MATH-REORG.
00758 MOVE SPACES TO MATH-REORG-REC.
00759 READ MATH-CHANGE AT END GO TO TRANSFER-REST-OF-MATH-FILE.
00760 READ MATH-DEPT-STUD-DB AT END GO TO CLOSE-MATH-FILES.
00761 PERFORM INITIALIZE-RECORD-BUFF.
00762 IF SSN OF MATH-CHANGE-REC < SSN OF STUD-REC-M
00763 THEN PERFORM CREATE-MATH-REC, PERFORM READ-MATH-CHANGE
00764 ELSE MOVE CORR STUD-REC-M TO RECORD-BUFF, PERFORM
00765 READ-FILES-TO-BE-MERGED.
00766 GO TO COMPARE-FOR-MERGE.

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00768 READ-FILES-TO-BE-MERGED.
00769 READ MATH-DEPT-STUD-DB AT END
00770 PERFORM WRITE-NEW-FILES-ONLY
00771 GO TO CLOSE-MATH-FILES.
00772 READ-MATH-CHANGE.
00773 READ MATH-CHANGE AT END
00774 GO TO TRANSFER-REST-OF-MATH-FILE.
00775

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00776 COMPARE-FOR-MERGE.
00777 IF SSN OF MATH-CHANGE-REC = SSN OF RECORD-BUFF
00778 PERFORM UPDATE-MATH-REC, PERFORM READ-MATH-CHANGE
00779 GO TO COMPARE-FOR-MERGE.
00780 IF DELETE-CHAR IS NOT = 'D'
00781 THEN IF SSN OF RECORD-BUFF IS NOT = 0
00782 THEN WRITE MATH-REORG-REC FROM RECORD-BUFF
00783 PERFORM INITIALIZE-RECORD-BUFF
00784 ELSE NEXT SENTENCE
00785 ELSE MOVE SSN OF RECORD-BUFF TO SSN OF MATH-REORG-REC
00786 PERFORM INITIALIZE-RECORD-BUFF
00787 MOVE SSN OF MATH-REORG-REC TO SSN OF RECORD-BUFF
00788 WRITE MATH-REORG-REC FROM RECORD-BUFF.
00789 MOVE SPACES TO DELETE-CHAR.
00790 IF SSN OF MATH-CHANGE-REC = SSN OF STUD-REC-M
00791 THEN MOVE CORR STUD-REC-M TO RECORD-BUFF,
00792 PERFORM UPDATE-MATH-REC
00793 PERFORM READ-MATH-CHANGE
00794 PERFORM READ-FILES-TO-BE-MERGED
00795 ELSE IF SSN OF MATH-CHANGE-REC > SSN OF STUD-REC-M
00796 THEN MOVE STUD-REC-M TO RECORD-BUFF
00797 WRITE MATH-REORG-REC FROM RECORD-BUFF
00798 PERFORM INITIALIZE-RECORD-BUFF
00799 PERFORM READ-FILES-TO-BE-MERGED
00800 ELSE PERFORM CREATE-MATH-REC
00801 PERFORM READ-MATH-CHANGE.
00802 GO TO COMPARE-FOR-MERGE.

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00R03      INITIALIZE-RECORD-BUFF.
00R04      MOVE SPACES TO RECORD-BUFF, MOVE ZEROS TO SSN OF
00R05      RECORD-BUFF, MOVE ZEROS TO ADVISOR-SSN OF RECORD-BUFF.
00R06
00R07
00R08      WRITE-NEW-FILES-ONLY.
00R09      IF SSN OF RECORD-BUFF IS EQUAL TO 0
00R10      THEN PERFORM CREATE-MATH-REC
00R11      ELSE IF SSN OF RECORD-BUFF IS EQUAL TO SSN OF
00R12      MATH-CHANGE-REC
00R13      THEN PERFORM CREATE-MATH-REC
00R14      ELSE WRITE MATH-REORG-REC FROM RECORD-BUFF
00R15      PERFORM INITIALIZE-RECORD-BUFF,
00R16      PERFORM CREATE-MATH-REC.
00R17      READ MATH-CHANGE AT END WRITE MATH-REORG-REC FROM
00R18      RECORD-BUFF, GO TO CLOSE-MATH-FILES.
00R19      GO TO WRITE-NEW-FILES-ONLY.
00R20
00R21      TRANSFER-REST-OF-MATH-FILE.
00R22      IF SSN OF RECORD-BUFF IS NOT = 0
00R23      THEN IF SSN OF RECORD-BUFF = SSN OF STUD-REC-M
00R24      THEN WRITE MATH-REORG-REC FROM RECORD-BUFF
00R25      PERFORM INITIALIZE-RECORD-BUFF
00R26      ELSE WRITE MATH-REORG-REC FROM RECORD-BUFF
00R27      PERFORM INITIALIZE-RECORD-BUFF
00R28      WRITE MATH-REORG-REC FROM STUD-REC-M
00R29      ELSE WRITE MATH-REORG-REC FROM STUD-REC-M.
00R30      READ MATH-DEPT-STUD-DB AT END GO TO CLOSE-MATH-FILES.
00R31      GO TO TRANSFER-REST-OF-MATH-FILE.
00R32      CLOSE-MATH-FILES.
00R33      MOVE SPACES TO DELETE-CHAR.
00R34      CLOSE MATH-DEPT-STUD-DB,
00R35      MATH-CHANGE,
00R36      MATH-REORG.
00R37      OPEN INPUT MATH-REORG,
00R38      OUTPUT MATH-DEPT-STUD-DB.

00R40
00R41      TRANSFER-TO-MATH-DB.
00R42      READ MATH-REORG. AT END GO TO END-MERGE-MATH-DATA.
00R43      MOVE SPACES TO STUD-REC-M.
00R44      MOVE ZEROS TO SSN OF STUD-REC-M, MOVE ZEROS TO ADVISOR-SSN
00R45      OF STUD-REC-M.
00R46      IF SSN OF MATH-REORG-REC IS NOT EQUAL TO 0
00R47      THEN WRITE STUD-REC-M FROM MATH-REORG-REC.
00R48      GO TO TRANSFER-TO-MATH-DB.
00R49      END-MERGE-MATH-DATA.
00R50      CLOSE MATH-REORG, MATH-DEPT-STUD-DB.

00R51
00R52      ***** REFERENCE HIPO 2.1.1 *****
00R53      CREATE-MATH-REC.
00R54      IF COWD = 'V' MOVE CORR ADVISOR-W
00R55      TO RECORD-BUFF.
00R56      ELSE IF COWD = 'O' MOVE CORR FTU-ATTEND-W
00R57      TO RECORD-BUFF.
00R58      ELSE IF COWD = 'M' MOVE CORR ASSN-MBR-W

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00858      TO RECORD-BUFF.
00859  ELSE
00860      STRING ' CANNOT LOCATE RECORD TO BE CHANGED FOR SSN '
00861      SSN OF MBR-DELETE-W DELIMITED BY SIZE INTO
00862      ERR-MSG-LINE
00863      MOVE MATH-CHANGE-REC TO CODE-CHECK
00864      PERFORM INVALID-INPUT.

00866 ***** REFERENCE HIPO 2.1.2 *****
00867  UPDATE-MATH-REC.
00868      IF COWD = 'V' PERFORM CODE-V THRU CODE-V-EXIT.
00869      IF COWD = 'Q' PERFORM CODE-Q THRU CODE-Q-EXIT.
00870      IF COWD = 'M' PERFORM CODE-M THRU CODE-M-EXIT.
00871      IF COWD = 'Z' PERFORM CODE-Z THRU CODE-Z-EXIT.
00872      IF COWD = 'X' PERFORM CODE-X THRU CODE-X-EXIT.
00873      IF COWD = 'D' PERFORM CODE-D THRU CODE-D-EXIT.

00874  CODE-V.
00875      MOVE CORR ADVISOR-W TO RECORD-BUFF.
00876  CODE-V-EXIT. EXIT.

00877  CODE-Q.
00878      MOVE SPACES TO WORK-AREA1.
00879      MOVE SPACES TO WORK-AREA2.
00880      MOVE ATTEND-DATA OF FTU-ATTEND-W TO WORK-AREA1.
00881      MOVE ATTEND-DATA OF RECORD-BUFF TO WORK-AREA2.
00882      MOVE SPACES TO ATTEND-DATA OF RECORD-BUFF.
00883      STRING WORK-AREA2 WORK-AREA1 DELIMITED BY
00884      ' ' INTO ATTEND-DATA OF RECORD-BUFF.
00885  CODE-Q-EXIT. EXIT.

00886  CODE-M.
00887      MOVE SPACES TO WORK-AREA1.
00888      MOVE SPACES TO WORK-AREA2.
00889      MOVE MBR-DATA OF ASSN-MBR-W TO WORK-AREA1.
00890      MOVE MBR-DATA OF RECORD-BUFF TO WORK-AREA2.
00891      MOVE SPACES TO MBR-DATA OF RECORD-BUFF.
00892      STRING WORK-AREA2 ' ' WORK-AREA1 DELIMITED
00893      BY ' ' INTO MBR-DATA OF RECORD-BUFF.
00894  CODE-M-EXIT. EXIT.

00895  CODE-D.
00896      MOVE 'D' TO DELETE-CHAR.
00897  CODE-D-EXIT. EXIT.

00898  CODE-Z.
00899      IF ATTEND-DATA OF FTU-ATTEND-DELETE-W IS EQUAL TO SPACES
00900      THEN MOVE SPACES TO ATTEND-DATA OF RECORD-BUFF.
00901      GO TO CODE-Z-EXIT.
00902      MOVE SPACES TO ATTEND-ARRAY.
00903      MOVE ATTEND-DATA OF RECORD-BUFF TO ATTEND-ARRAY.
00904      MOVE 1 TO PTR.
00905      SET Q TO 1.
00906      SEARCH QTR-ATTEND VARYING PTR AT END MOVE
00907      ' ATTENDANCE DATA ENTRY TO BE DELETED NOT FOUND ' TO
00908      ERR-MSG-LINE
00909
00910
00911
00912
00913

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00914      PERFORM INVALID-INPUT
00915      WHEN QTR-ATTEND (Q) = ATTEND-DATA OF FTU-ATTEND-DELETE-W
00916      MOVE ZEROS TO QTR-ATTEND (Q)
00917      PERFORM FILL-IN-A UNTIL PTR = 30
00918      MOVE ATTEND-ARRAY TO ATTEND-DATA OF RECORD-BUFF.
00919      CODE-Z-EXIT. EXIT.
00920
00921      FILL-IN-A.
00922      MOVE QTR-ATTEND (Q + 1) TO QTR-ATTEND (Q).
00923      SET Q UP BY 1.
00924      ADD 1 TO PTR.
00925      END-FILL-IN-A. EXIT.
00926
00927      CODE-X.
00928      MOVE SPACES TO MBR-TAB-FIELD.
00929      SET M TO 1.
00930      MOVE 1 TO PTR.
00931      UNSTRING MBR-DATA OF RECORD-BUFF DELIMITED BY ',' INTO
00932      MBR (M) MBR (M + 1) MBR (M + 2) MBR (M + 3) MBR (M + 4)
00933      MBR (M + 5) MBR (M + 6) MBR (M + 7) MBR (M + 8)
00934      MBR (M + 9) MBR (M + 10).
00935      SEARCH MBR VARYING PTR AT END MOVE
00936      ' MEMBERSHIP ENTRY TO BE DELETED NOT FOUND '
00937      TO ERR-MSG-LINE PERFORM INVALID-INPUT
00938      WHEN MBR (M) = ASSN-NAME OF MBR-DELETE-W
00939      MOVE SPACES TO MBR (M)
00940      PERFORM FILL-IN-M UNTIL PTR = 9
00941      MOVE MBR-TAB-FIELD TO MBR-DATA OF RECORD-BUFF.
00942      CODE-X-EXIT. EXIT.
00943
00944      FILL-IN-M.
00945      MOVE MBR (M + 1) TO MBR (M).
00946      SET M UP BY 1.
00947      ADD 1 TO PTR.
00948      END-FILL-IN-M. EXIT.
00949
00950      ***** REFERENCE HIPO 2.1.3 *****
00951      STAT-HIST.
00952      OPEN I-O STAT-HIST-DB. OUTPUT HIST-REORG.
00953      OUTPUT PRINT-FILE.
00954      MOVE ZEROS TO HIST-REORG-REC.
00955      IF COND = 'H'
00956      MOVE ZEROS TO ACCUMULATORS
00957      MOVE CORR HIST-DATA TO ACCUMULATORS
00958      MOVE QTR-H TO QTR-BUFF
00959      PERFORM READ-HIST THRU EXIT-READ-HIST.
00960      CLOSE STAT-HIST-DB. HIST-REORG. PRINT-FILE.
00961      IF QTR-BUFF IS NOT EQUAL TO 0
00962      THEN IF ACCUMULATORS IS EQUAL TO 0
00963      THEN MOVE
00964      ' ENTRY TO BE DELETED NOT FOUND IN STATISTICS HIST FILE '
00965      TO ERR-MSG-LINE.
00966      PERFORM INVALID-INPUT.
00967      PERFORM SORT-STAT-HIST.
00968      EXIT-STAT-HIST. EXIT.
00969

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00970 READ-HIST.
00971 READ STAT-HIST-DB AT END GO TO END-READ-HIST.
00972 IF QTR OF STAT-REC IS EQUAL TO QTR-BUFF
00973 THEN MOVE CORR ACCUMULATORS TO STAT-REC.
00974 MOVE ZEROS TO QTR-BUFF.
00975 IF COMP-UG OF STAT-REC IS NOT EQUAL TO 0
00976 THEN WRITE HIST-REORG-REC FROM STAT-REC.
00977 GO TO READ-HIST.
00978 END-READ-HIST.
00979 MOVE ZEROS TO HIST-REORG-REC.
00980 IF ACCUMULATORS IS NOT EQUAL TO 0
00981 THEN IF QTR-BUFF IS NOT EQUAL TO 0
00982 THEN MOVE CORR ACCUMULATORS TO HIST-REORG-REC
00983 MOVE QTR-BUFF TO QTR OF HIST-REORG-REC
00984 MOVE ZEROS TO QTR-BUFF
00985 WRITE HIST-REORG-REC.
00986 EXIT-READ-HIST. EXIT.
00987
00988 SORT-STAT-HIST.
00989 MOVE 102400 TO SORT-CORE-SIZE.
00990 SORT SORT-WORK-HDR
00991 DESCENDING KEY QTR OF SORT-HDB-REC
00992 USING HIST-REORG
00993 GIVING STAT-HIST-DB.
00994 END-MATH-LOAD-UPDATE-SECTION.

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00996 ***** REFERENCE HIPO 2.2 *****
00997 LOAD-FTU-DATA SECTION.
00998 IF COOD IS NOT EQUAL TO '1' AND '2' AND '3' AND '4' THEN
00999 GO TO GET-SPIN-OFF.
01000 OPEN OUTPUT SPIN-OFF.
01001
01002 INITIALIZE-SPO-REC.
01003 MOVE SPACES TO SPIN-OFF-REC.
01004 MOVE ZEROS TO SSN OF SPIN-OFF-REC.
01005 MOVE ZEROS TO FTU-SUMMARY OF SPIN-OFF-REC.
01006
01007 ***** REFERENCE HIPO 2.2.2 *****
01008 DECODE-SPIN-OFF.
01009 IF COOD = '1' MOVE CORR BASIC-DATA-1 TO SPIN-OFF-REC.
01010 IF COOD = '2' MOVE CORR STUD-ADDRESS-2 TO SPIN-OFF-REC.
01011 IF COOD = '3' MOVE CORR PARENTS-ADDRESS-3 TO SPIN-OFF-REC.
01012 IF COOD = '4' MOVE CORR INDEX-4 TO INDEX-CONVERT
01013 MOVE INDEX-CONVERT TO INDX OF SPIN-OFF-REC
01014 MOVE SSN OF INDEX-4 TO SSN OF SPIN-OFF-REC.
01015 END-DECODE. EXIT.
01016
01017 READ-NEXT-CARD.
01018 READ CARD-IN AT END GO TO
01019 CHECK-FOR-END-OF-SPO.
01020 IF COOD IS NOT EQUAL TO '1' AND '2' AND '3' AND '4' THEN
01021 WRITE SPIN-OFF-REC
01022 CLOSE SPIN-OFF
01023 GO TO CHECK-FOR-END-OF-SPO.
01024 IF SSN OF BASIC-DATA-1 IS NOT EQUAL TO SSN OF SPIN-OFF-REC
01025 THEN WRITE SPIN-OFF-REC
01026 PERFORM INITIALIZE-SPO-REC.
01027 PERFORM DECODE-SPIN-OFF THRU END-DECODE.
01028 GO TO READ-NEXT-CARD.
01029

01031 ***** REFERENCE HIPO 2.2.1 *****
01032 GET-SPIN-OFF.
01033 * GET-SPIN-OFF TO BE WRITTEN.

01035 CHECK-FOR-END-OF-SPO.
01036 IF COOD IS NOT EQUAL TO '*' THEN
01037 MOVE ' * EXPECTED BUT DID NOT FIND * TO INDICATE END MARKE
01038 - 'R FOR SPIN-OFF ' TO ERR-MSG-LINE.
01039 PERFORM INVALID-INPUT.

01041 ***** REFERENCE HIPO 2.2.3 *****
01042 LOAD-STUD-DB.
01043 OPEN INPUT SPIN-OFF.
01044 OPEN OUTPUT STUD-DATA-BASE.
01045 PERFORM INITIALIZE-STUD-DB-REC.
01046 TRANSFER-DATA.
01047 READ SPIN-OFF AT END GO TO END-OF-LOAD-STUD-DB.
01048 MOVE CORR SPIN-OFF-REC TO STUD-DB-REC.
01049 MOVE FTU-GPA OF SPIN-OFF-REC TO GPA OF STUD-DB-REC.

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01050 MOST-RECENT-QTR-AND-IF-GRAD.
01051     MOVE INDX OF SPIN-OFF-REC TO INDEX-ARRAY-LOAD-FIELD.
01052     MOVE 0 TO CTR.
01053 SET-CTR-LOOP.
01054     MOVE CURRENT-QTR-CODE TO SUBSCRIPT, SUBTRACT CTR FROM
01055     SUBSCRIPT.
01056     IF INDEX-ENTRY (SUBSCRIPT)
01057     IS NOT EQUAL TO '*****' THEN
01058         GO TO HAS-STUD-GRADUATED.
01059     ADD 1 TO CTR.
01060     IF (CURRENT-QTR-CODE - CTR) > 0 GO TO SET-CTR-LOOP
01061     ELSE STRING ' * CANNOT DETERMINE LAST QTR ATTENDED FOR '
01062     LAST-NAME OF SPIN-OFF-REC FRST-MDLE-NAME OF SPIN-OFF-REC
01063     SSN OF SPIN-OFF-REC
01064     ' CHECK SPIN-OFF DATA AND CURRENT QTR INPUT'
01065     DELIMITED BY SIZE INTO ERR-MSG-LINE
01066     OPEN OUTPUT PRINT-FILE
01067     WRITE PRINT-LINE FROM ERR-MSG-LINE AFTER POSITIONING
01068     3 LINES
01069     CLOSE PRINT-FILE
01070     MOVE SPACES TO ERR-MSG-LINE.
01071 HAS-STUD-GRADUATED.
01072     IF (CURRENT-QTR-CODE - CTR) = 0
01073     THEN MOVE '?' TO GRAD OF STUD-DB-REC
01074     MOVE ZEROS TO FTU-LAST-QTR OF STUD-DB-REC
01075     GO TO STUD-LEVEL-OF-STUDY.
01076     MOVE CURRENT-QTR-CODE TO SUBSCRIPT, SUBTRACT CTR FROM
01077     SUBSCRIPT.
01078     IF GRD-IND OF INDEX-ENTRY (SUBSCRIPT)
01079     IS EQUAL TO '1' OR '2'
01080     MOVE 'Y' TO GRAD OF STUD-DB-REC
01081     ELSE MOVE 'N' TO GRAD OF STUD-DB-REC.
01082     SET YQ TO SUBSCRIPT
01083     MOVE YR-QTR (YQ)
01084     TO FTU-LAST-QTR OF STUD-DB-REC.
01085 STUD-LEVEL-OF-STUDY.
01086     IF APPL-TYPE OF SPIN-OFF-REC < 5 MOVE 'U' TO
01087     GRAD-UG-PB OF STUD-DB-REC.
01088     IF APPL-TYPE OF SPIN-OFF-REC = 5 MOVE 'P' TO
01089     GRAD-UG-PB OF STUD-DB-REC.
01090     IF APPL-TYPE OF SPIN-OFF-REC = 6 OR APPL-TYPE OF SPIN-OFF-REC
01091     = 8 MOVE 'G' TO GRAD-UG-PB OF STUD-DB-REC.
01092     IF APPL-TYPE OF SPIN-OFF-REC IS NOT EQUAL TO 1 AND 2 AND 3
01093     AND 4 AND 5 AND 6 AND 8 THEN
01094     MOVE '?' TO GRAD-UG-PB OF STUD-DB-REC
01095     STRING ' * CANNOT DETERMINE IF ' LAST-NAME OF
01096     SPIN-OFF-REC FRST-MDLE-NAME OF SPIN-OFF-REC
01097     SSN OF SPIN-OFF-REC
01098     ' IS GRAD, UG, OR PB - IS NOT INCLUDED IN STATISTICS
01099     - ' ' DELIMITED BY SIZE INTO ERR-MSG-LINE
01100     OPEN OUTPUT PRINT-FILE
01101     WRITE PRINT-LINE FROM ERR-MSG-LINE AFTER POSITIONING 3
01102     LINES
01103     CLOSE PRINT-FILE
01104     MOVE SPACES TO ERR-MSG-LINE.
01105 ENTER-STUD-MAJOR.
01106     IF MAJOR-1 OF SPIN-OFF-REC = 1701

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01107      THEN MOVE 'MATH' TO MAJOR OF STUD-DB-REC.
01108      IF MAJOR-1 OF SPIN-OFF-REC = 1790
01109      THEN MOVE 'MATH' TO MAJOR OF STUD-DB-REC.
01110      IF MAJOR-1 OF SPIN-OFF-REC = 0701
01111      THEN MOVE 'COMP' TO MAJOR OF STUD-DB-REC.
01112      IF MAJOR-1 OF SPIN-OFF-REC = 1702
01113      THEN MOVE 'STAT' TO MAJOR OF STUD-DB-REC.
01114      IF MAJOR-1 OF SPIN-OFF-REC IS NOT EQUAL TO
01115      1701 AND 1790 AND 0701 AND 1702
01116      THEN MOVE '????' TO MAJOR OF STUD-DB-REC
01117      STRING ' * CANNOT DETERMINE MAJOR OF ' LAST-NAME OF
01118      SPIN-OFF-REC FRST-MDLE-NAME OF SPIN-OFF-REC SSN OF
01119      SPIN-OFF-REC
01120      ' DATA NOT INCLUDED IN STATISTICS' DELIMITED BY SIZE
01121      INTO ERR-MSG-LINE
01122      OPEN OUTPUT PRINT-FILE
01123      WRITE PRINT-LINE FROM ERR-MSG-LINE AFTER POSITIONING
01124      3 LINES
01125      CLOSE PRINT-FILE
01126      MOVE SPACES TO ERR-MSG-LINE.
01127      MOVE-GPA.
01128      MOVE FTU-GPA OF FTU-SUMMARY OF SPIN-OFF-REC TO GPA OF
01129      STUD-DB-REC.
01130      WRITE-STUD-DB-REC.
01131      IF SSN OF STUD-DB-REC IS NOT EQUAL TO 0
01132      THEN IF SSN OF STUD-DB-REC IS NUMERIC
01133      THEN WRITE STUD-DB-REC.
01134      PERFORM INITIALIZE-STUD-DB-REC.
01135      GO TO TRANSFER-DATA.
01136      INITIALIZE-STUD-DB-REC.
01137      MOVE SPACES TO STUD-DB-REC.
01138      MOVE ZEROS TO GPA OF STUD-DB-REC.
01139      MOVE ZEROS TO FTU-LAST-QTR OF STUD-DB-REC.
01140      MOVE ZEROS TO ADVISOR-SSN OF STUD-DB-REC.
01141      MOVE ZEROS TO SSN OF STUD-DB-REC.
01142      END-OF-LOAD-STUD-DB.
01143      CLOSE SPIN-OFF, STUD-DATA-BASE.
01144      END-FTU-DATA-SECTION.

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01146 ***** REFERENCE HIPO 2.3 *****
01147 GENERATE-REPORTS SECTION.
01148     SORT SORT-WORK-SDR
01149         ASCENDING KEY SSN OF SORT-SDR-REC
01150         USING STUD-DATA-BASE
01151         GIVING STUD-DATA-BASE.
01152     IF MATH-CHANGE-MADE = 'N' GO TO BRANCH-TO-PRINT-RTN.
01153     OPEN OUTPUT PRINT-FILE.
01154     OPEN INPUT MATH-DEPT-STUD-DB.
01155     OPEN I-O STUD-DATA-BASE.
01156     PERFORM MERGE-DATA.
01157     PERFORM READ-NEXT-STUD-DB-REC.
01158     PERFORM COMPARE-RECORDS THRU END-OF-MERGE-DATA.
01159     CLOSE PRINT-FILE.
01160     CLOSE MATH-DEPT-STUD-DB, STUD-DATA-BASE.
01161     BRANCH-TO-PRINT-RTN.
01162     PERFORM IDENTIFY-TYPE-REPORT THRU EXIT-ID-REPORT.
01163     GO TO EXIT-GEN-RPTS-SECTION.

01165 ***** REFERENCE HIPO 2.3.1 *****
01166     MERGE-DATA.
01167     READ MATH-DEPT-STUD-DB AT END WRITE STUD-DB-REC,
01168         GO TO END-OF-MERGE-DATA.
01169     READ-NEXT-STUD-DB-REC.
01170     READ STUD-DATA-BASE AT END GO TO END-OF-MERGE-DATA.
01171
01172     COMPARE-RECORDS.
01173     IF SSN OF STUD-DB-REC = SSN OF STUD-REC-M THEN
01174         MOVE CORR STUD-REC-M TO STUD-DB-REC
01175         WRITE STUD-DB-REC
01176         PERFORM NULL-STUD-DB-REC
01177         PERFORM READ-NEXT-STUD-DB-REC, PERFORM MERGE-DATA,
01178             GO TO COMPARE-RECORDS.
01179     IF SSN OF STUD-REC-M < SSN OF STUD-DB-REC THEN
01180         STRING ' * SSN ' SSN OF STUD-REC-M ' NOT FOUND IN FTU '
01181             ' SUPPLIED DATA. VERIFY SSN.' DELIMITED BY SIZE
01182             INTO ERR-MSG-LINE
01183         WRITE PRINT-LINE FROM ERR-MSG-LINE AFTER POSITIONING 3
01184             LINES
01185         MOVE SPACES TO ERR-MSG-LINE
01186         PERFORM MERGE-DATA
01187         GO TO COMPARE-RECORDS.
01188     WRITE STUD-DB-REC.
01189     PERFORM READ-NEXT-STUD-DB-REC.
01190     GO TO COMPARE-RECORDS.
01191     END-OF-MERGE-DATA. EXIT.
01192     NULL-STUD-DB-REC.
01193     IF ADVISOR-NAME OF STUD-REC-M IS EQUAL TO SPACES
01194         THEN IF ADVISOR-SSN OF STUD-REC-M IS EQUAL TO ZEROS
01195         THEN IF ATTEND-DATA OF STUD-REC-M = SPACES
01196         THEN IF MBR-DATA OF STUD-REC-M = SPACES
01197         THEN MOVE ZEROS TO SSN OF STUD-REC-M.

01199 ***** REFERENCE HIPO 2.3 (CONT) *****
01200     IDENTIFY-TYPE-REPORT.

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01201      IF COOD = 'C' PERFORM PRINT-STAT THRU END-PRINT-STAT.
01202      IF COOD = 'R' OR 'F' THEN
01203          MOVE 102400 TO SORT-CORE-SIZE
01204          SORT SORT-WORK-SDR
01205              DESCENDING KEY FTU-LAST-QTR OF SORT-SDR-REC
01206              ASCENDING KEY MAJOR          OF SORT-SDR-REC
01207              ASCENDING KEY GRAD-UG-PB      OF SORT-SDR-REC
01208              ASCENDING KEY LAST-NAME       OF SORT-SDR-REC
01209              ASCENDING KEY FRST-MDLE-NAME OF SORT-SDR-REC
01210              USING STUD-DATA-BASE
01211              GIVING STUD-DATA-BASE
01212          PERFORM PRINT-REPT THRU END-OF-PRINT-REPT.
01213      IF COOD = 'A' THEN
01214          MOVE 102400 TO SORT-CORE-SIZE
01215          SORT SORT-WORK-SDR
01216              ASCENDING KEY ADVISOR-SSN      OF SORT-SDR-REC
01217              ASCENDING KEY LAST-NAME       OF SORT-SDR-REC
01218              ASCENDING KEY FRST-MDLE-NAME OF SORT-SDR-REC
01219              USING STUD-DATA-BASE
01220              GIVING STUD-DATA-BASE
01221          PERFORM PRINT-REPT THRU END-OF-PRINT-REPT.
01222      EXIT-ID-REPORT.  EXIT.

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01224      ***** REFERENCE HIPO 2.3.2 *****
01225      PRINT-STAT.
01226          OPEN OUTPUT PRINT-FILE.
01227          MOVE ZEROS TO ACCUMULATORS.
01228          MOVE ZEROS TO QTR-BUFF.
01229          WRITE PRINT-LINE FROM PAGE-HEAD-DEPT AFTER POSITIONING 0
01230              LINES.
01231          WRITE PRINT-LINE FROM STUD-STAT-HEAD AFTER POSITIONING
01232              2 LINES.
01233          WRITE PRINT-LINE FROM DATE-HEAD AFTER POSITIONING 2 LINES.
01234          OPEN INPUT STUD-DATA-BASE.
01235      COMPUTE-CURRENT-STAT.
01236          READ STUD-DATA-BASE AT END CLOSE STUD-DATA-BASE,
01237              GO TO CURRENT-QTR-TO-QTR-BUFF.
01238          IF FTU-LAST-QTR OF STUD-DR-REC IS NOT EQUAL TO
01239              CURRENT-QTR THEN GO TO COMPUTE-CURRENT-STAT.
01240          IF MAJOR OF STUD-DR-REC = 'COMP' THEN PERFORM COMP-TALLY.
01241          IF MAJOR OF STUD-DR-REC = 'MATH' THEN PERFORM MATH-TALLY.
01242          IF MAJOR OF STUD-DR-REC = 'STAT' THEN ADD 1 TO STAT-UG
01243              OF ACCUMULATORS.
01244          GO TO COMPUTE-CURRENT-STAT.
01245      COMP-TALLY.
01246          IF GRAD-UG-PB OF STUD-DR-REC = 'G' THEN
01247              ADD 1 TO COMP-GR OF ACCUMULATORS.
01248          IF GRAD-UG-PB OF STUD-DR-REC = 'U' THEN
01249              ADD 1 TO COMP-UG OF ACCUMULATORS.
01250          IF GRAD-UG-PB OF STUD-DR-REC = 'P' THEN
01251              ADD 1 TO COMP-PR OF ACCUMULATORS.
01252      MATH-TALLY.
01253          IF GRAD-UG-PB OF STUD-DR-REC = 'G' THEN
01254              ADD 1 TO MATH-GR OF ACCUMULATORS.
01255          IF GRAD-UG-PB OF STUD-DR-REC = 'U' THEN
01256              ADD 1 TO MATH-UG OF ACCUMULATORS.

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01257       IF GRAD-UG-PB OF STUD-DB-REC = 'P' THEN
01258           ADD 1 TO MATH-PB OF ACCUMULATORS.
01259       CURRENT-QTR-TO-QTR-BUFF.
01260       MOVE CURRENT-QTR TO QTR-BUFF.
01261       UPDATE-STAT-HIST-FILE.
01262       OPEN I-O STAT-HIST-DB, OUTPUT HIST-REORG.
01263       PERFORM READ-HIST THRU EXIT-READ-HIST.
01264       CLOSE STAT-HIST-DB, HIST-REORG.
01265       PERFORM SORT-STAT-HIST.
01266       OPEN INPUT STAT-HIST-DB.
01267       PRINT-STAT-LOOP.
01268       READ STAT-HIST-DB AT END GO TO END-PRINT-STAT-LOOP.
01269       MOVE ZEROS TO ACCUMULATORS.
01270       MOVE CORR STAT-REC TO ACCUMULATORS.
01271       ADD COMP-UG OF ACCUMULATORS COMP-GR OF ACCUMULATORS
01272           COMP-PB OF ACCUMULATORS GIVING COMPTOT OF ACCUMULATORS.
01273       ADD MATH-UG OF ACCUMULATORS MATH-GR OF ACCUMULATORS
01274           MATH-PB OF ACCUMULATORS GIVING MATHTOT OF ACCUMULATORS.
01275       MOVE STAT-UG OF ACCUMULATORS TO STATTOT OF ACCUMULATORS.
01276       ADD COMPTOT OF ACCUMULATORS MATHTOT OF ACCUMULATORS
01277           STATTOT OF ACCUMULATORS GIVING TOTSTUDS OF ACCUMULATORS.
01278       MOVE QTR OF STAT-HIST-DB TO QTR-PRINT.
01279       WRITE PRINT-LINE FROM CURRENT-QTR-PRINT AFTER POSITIONING
01280           3 LINES.
01281       WRITE PRINT-LINE FROM STUD-STAT-COL-HEAD AFTER POSITIONING
01282           2 LINES.
01283       ADD MATH-UG OF ACCUMULATORS STAT-UG OF ACCUMULATORS COMP-UG
01284           OF ACCUMULATORS GIVING TOT-UG OF STUD-STAT-UNGRAD.
01285       MOVE CORR ACCUMULATORS TO STUD-STAT-UNGRAD.
01286       WRITE PRINT-LINE FROM STUD-STAT-UNGRAD AFTER POSITIONING
01287           2 LINES.
01288       ADD MATH-GR OF ACCUMULATORS COMP-GR OF ACCUMULATORS GIVING
01289           TOT-GR OF STUD-STAT-GRAD.
01290       MOVE CORR ACCUMULATORS TO STUD-STAT-GRAD.
01291       WRITE PRINT-LINE FROM STUD-STAT-GRAD AFTER POSITIONING
01292           2 LINES.
01293       ADD COMP-PB OF ACCUMULATORS MATH-PB OF ACCUMULATORS
01294           GIVING TOT-PB OF STUD-STAT-POST-BAC.
01295       MOVE CORR ACCUMULATORS TO STUD-STAT-POST-BAC.
01296       WRITE PRINT-LINE FROM STUD-STAT-POST-BAC AFTER
01297           POSITIONING 2 LINES.
01298       MOVE CORR ACCUMULATORS TO STUD-STAT-TOT.
01299       WRITE PRINT-LINE FROM STUD-STAT-TOT AFTER POSITIONING
01300           2 LINES.
01301       MOVE SPACES TO PRINT-LINE.
01302       WRITE PRINT-LINE AFTER POSITIONING 3 LINES.
01303       GO TO PRINT-STAT-LOOP.
01304       END-PRINT-STAT-LOOP.
01305       MOVE SPACES TO PRINT-LINE.
01306       WRITE PRINT-LINE AFTER POSITIONING 0 LINES.
01307       CLOSE PRINT-FILE, STAT-HIST-DB.
01308       END-PRINT-STAT. EXIT.

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01310 ***** REFERENCE HIPO 2.3.3 *****
01311 PRINT-REPT.
01312 IF COOD = 'R' THEN MOVE 'R' TO KODE.

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01313      IF C00D = 'F' THEN MOVE 'F' TO KODE.
01314      IF C00D = 'A' THEN MOVE 'A' TO KODE.
01315      PERFORM PRINT-RTN THRU PRINT-RTN-END.
01316      IF C00D = 'R' THEN
01317          MOVE 102400 TO SORT-CORE-SIZE
01318          SORT SORT-WORK-SDR
01319              DESCENDING KEY ADVISOR-SSN OF SORT-SDR-REC
01320              ASCENDING KEY LAST-NAME      OF SORT-SDR-REC
01321              ASCENDING KEY FRST-MDLE-NAME OF SORT-SDR-REC
01322              USING STUD-DATA-BASE
01323              GIVING STUD-DATA-BASE
01324          MOVE 'S' TO KODE
01325          PERFORM PRINT-RTN THRU PRINT-RTN-END.
01326      END-OF-PRINT-REPT. EXIT.
01327      EXIT-GEN-RPTS-SECTION. EXIT.
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01329 ***** REFERENCE HIPO 4.1 *****
01330 PRINT-RTN SECTION.
01331     MOVE 'NO' TO BREAK-STATUS.
01332     OPEN INPUT STUD-DATA-BASE OUTPUT PRINT-FILE.
01333     READ STUD-DATA-BASE
01334     AT END MOVE 'NO INPUT FROM STUD DATA BASE' TO
01335     PRINT-LINE. WRITE PRINT-LINE AFTER POSITIONING 2 LINES
01336     GO TO EXIT-PRINT-RTN-SECTION.
01337 LOOP-PRINT-RTN.
01338     PERFORM LOAD-BREAK-FIELDS.
01339     PERFORM PRINT-HEADINGS THRU EXIT-PRINT-HEADINGS.
01340     PERFORM PRINT-DATA THRU EXIT-PRINT-DATA UNTIL BREAK-STATUS
01341     IS NOT EQUAL TO 'NO'.
01342     IF BREAK-STATUS IS NOT EQUAL TO 'EOF' THEN
01343     MOVE 'NO' TO BREAK-STATUS
01344     GO TO LOOP-PRINT-RTN.
01345 PRINT-RTN-END.
01346     MOVE SPACES TO PRINT-LINE.
01347     WRITE PRINT-LINE AFTER POSITIONING 0 LINES.
01348     CLOSE STUD-DATA-BASE. PRINT-FILE.
01349 EXIT-PRINT-RTN-SECTION.
01350     GO TO END-OF-PRINT-RTN-SECTION.

01352 PRINT-HEADINGS.
01353     MOVE SPACES TO PRINT-LINE.
01354     WRITE PRINT-LINE FROM PAGE-HEAD-DEPT AFTER POSITIONING
01355     0 LINES.
01356     IF CODE = 'R' OR 'F' THEN
01357     PERFORM FORMULATE-SUB-HEADINGS THRU EXIT-SUB-HEAD.
01358     IF CODE = 'F'
01359     WRITE PRINT-LINE FROM FAC-ADV-HEAD AFTER POSITIONING
01360     2 LINES.
01361     IF CODE = 'R' OR 'F'
01362     WRITE PRINT-LINE FROM TITLE-ROST AFTER POSITIONING
01363     2 LINES.
01364     IF CODE = 'S' MOVE ' FACULTY ADVISOR EXTRACT OF STUDENT ROST
01365     'ER ' TO TITLE-LINE
01366     WRITE PRINT-LINE FROM TITLE-ROST AFTER POSITIONING 2
01367     LINES.
01368     IF CODE = 'O' WRITE PRINT-LINE FROM FORMER-STUD-HEAD AFTER
01369     POSITIONING 2 LINES.
01370     WRITE PRINT-LINE FROM DATE-HEAD AFTER POSITIONING 2 LINES.
01371     MOVE SPACES TO PRINT-LINE. WRITE PRINT-LINE AFTER POSITIONING
01372     2 LINES.
01373     IF CODE = 'A'
01374     THEN IF ADVISOR-NAME OF STUD-DB-REC IS EQUAL TO SPACES
01375     THEN WRITE PRINT-LINE FROM ADVISEE-HEAD-ALT AFTER
01376     POSITIONING 2 LINES
01377     ELSE MOVE ADVISOR-NAME OF STUD-DB-REC TO ADVISOR-NAME
01378     OF ADVISEE-HEAD
01379     WRITE PRINT-LINE FROM ADVISEE-HEAD AFTER POSITIONING
01380     2 LINES.
01381     IF CODE = 'F' WRITE PRINT-LINE FROM FAC-ADV-COL-HEAD AFTER
01382     POSITIONING 2 LINES.
01383 EXIT-PRINT-HEADINGS. EXIT.
01384

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01385 LOAD-BREAK-FIELDS.
01386 MOVE MAJOR OF STUD-DB-REC TO BREAK-1.
01387 MOVE GRAD-UG-PR OF STUD-DB-REC TO BREAK-2.
01388 MOVE ADVISOR-SSN OF STUD-DB-REC TO BREAK-3.
01389
01390 FORMULATE-SUB-HEADINGS.
01391 IF MAJOR OF STUD-DB-REC = 'COMP' THEN
01392 IF GRAD-UG-PR OF STUD-DB-REC = 'G' THEN
01393 MOVE ' GRADUATE COMPUTER SCIENCE MAJORS '
01394 TO TITLE-LINE
01395 ELSE IF GRAD-UG-PR OF STUD-DB-REC = 'U' THEN
01396 MOVE ' UNDERGRADUATE COMPUTER SCIENCE MAJORS '
01397 TO TITLE-LINE
01398 ELSE MOVE ' POST-BACCALAUREATE COMPUTER SCIENCE MAJORS '
01399 TO TITLE-LINE
01400 ELSE NEXT SENTENCE.
01401 IF MAJOR OF STUD-DB-REC = 'MATH' THEN
01402 IF GRAD-UG-PR OF STUD-DB-REC = 'G' THEN
01403 MOVE ' GRADUATE MATHEMATICAL SCIENCE MAJORS '
01404 TO TITLE-LINE
01405 ELSE IF GRAD-UG-PR OF STUD-DB-REC = 'U' THEN
01406 MOVE ' UNDERGRADUATE MATHEMATICS MAJORS '
01407 TO TITLE-LINE
01408 ELSE MOVE ' POST-BACCALAUREATE MATHEMATICAL SCIENCE MAJORS '
01409 TO TITLE-LINE
01410 ELSE NEXT SENTENCE.
01411 IF MAJOR OF STUD-DB-REC = 'STAT' THEN
01412 MOVE ' UNDERGRADUATE STATISTICS MAJORS '
01413 TO TITLE-LINE.
01414 EXIT-SUB-HEAD. EXIT.
01415
01416 PRINT-DATA.
01417 MOVE CORR STUD-DB-REC TO ABBR-NAME.
01418 IF CODE = 'S'
01419 THEN IF FTU-LAST-QTR OF STUD-DB-REC IS NOT EQUAL TO
01420 CURRENT-QTR
01421 THEN IF ADVISOR-SSN OF STUD-DB-REC IS EQUAL TO ZERO
01422 THEN PERFORM CONTINUE-ON. GO TO PRINT-DATA.
01423 IF CODE = 'S' THEN PERFORM ROSTER-PRINT.
01424 IF CODE = 'R'
01425 THEN IF FTU-LAST-QTR OF STUD-DB-REC
01426 IS EQUAL TO CURRENT-QTR
01427 THEN PERFORM ROSTER-PRINT.
01428 IF CODE = 'O'
01429 THEN IF FTU-LAST-QTR OF STUD-DB-REC IS NOT EQUAL TO
01430 CURRENT-QTR
01431 THEN IF ATTEND-DATA OF STUD-DB-REC IS EQUAL TO ' '
01432 THEN IF MBR-DATA OF STUD-DB-REC IS EQUAL TO ' '
01433 THEN IF ADVISOR-NAME OF STUD-DB-REC IS EQUAL TO ' '
01434 THEN IF ADVISOR-SSN OF STUD-DB-REC IS EQUAL TO 0
01435 THEN GO TO CONTINUE-ON.
01436 IF CODE = 'O' PERFORM ROSTER-PRINT.
01437 IF CODE = 'F' AND FTU-LAST-QTR OF STUD-DB-REC IS =
01438 CURRENT-QTR
01439 MOVE ABBR-NAME TO NAME OF FAC-ADV-DET-LINE
01440 MOVE ADVISOR-NAME OF STUD-DB-REC TO ADVISOR-NAME
01441

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01442      OF FAC-ADV-DET-LINE
01443      WRITE PRINT-LINE FROM FAC-ADV-DET-LINE AFTER
01444      POSITIONING 2 LINES.
01445      IF CODE = 'A'
01446      THEN IF FTU-LAST-QTR OF STUD-DB-REC IS EQUAL TO
01447      CURRENT-QTR
01448      MOVE ADDR-NAME TO NAME OF ADVISEE-DET-LINE
01449      WRITE PRINT-LINE FROM ADVISEE-DET-LINE AFTER POSITIONING
01450      2 LINES.
01451      CONTINUE-ON.
01452      READ STUD-DATA-BASE AT END MOVE 'EOF' TO BREAK-STATUS
01453      GO TO EXIT-PRINT-DATA.
01454      CONTINUE-ON-END.
01455      IF CODE = 'F'
01456      THEN IF FTU-LAST-QTR OF STUD-DB-REC IS NOT EQUAL TO
01457      CURRENT-QTR THEN MOVE 'EOF' TO BREAK-STATUS.
01458      GO TO EXIT-PRINT-DATA.
01459      IF CODE = 'R'
01460      THEN IF FTU-LAST-QTR OF STUD-DB-REC IS NOT EQUAL TO
01461      CURRENT-QTR
01462      THEN MOVE 'O' TO CODE
01463      MOVE 'YES' TO BREAK-STATUS
01464      GO TO EXIT-PRINT-DATA.
01465      IF CODE = 'R' OR 'F'
01466      THEN IF MAJOR OF STUD-DB-REC
01467      IS NOT EQUAL TO BREAK-1 OR GRAD-UG-PR OF STUD-DB-REC
01468      IS NOT EQUAL TO BREAK-2
01469      MOVE 'YES' TO BREAK-STATUS.
01470      IF CODE = 'A' OR 'S'
01471      THEN IF BREAK-3 IS NOT EQUAL TO ADVISOR-SSN
01472      OF STUD-DB-REC THEN MOVE 'YES' TO BREAK-STATUS.
01473      IF CODE = 'O' MOVE 'NO' TO BREAK-STATUS.
01474      EXIT-PRINT-DATA. EXIT.
01475
01476      POSTER-PRINT.
01477      MOVE CORR STUD-DB-REC TO NAME-LINE.
01478      MOVE FTU-LAST-QTR OF STUD-DB-REC TO FTU-LAST-QTR-EDIT.
01479      MOVE LAST-YR-ATT-EDIT TO LAST-YR-ATT OF FTU-LAST-QTR
01480      OF NAME-LINE.
01481      IF LAST-QTR-ATT = '1' THEN
01482      MOVE 'F' TO LAST-QTR-ATT SUBTRACT 1 FROM LAST-YR-ATT-EDIT
01483      MOVE LAST-YR-ATT-EDIT TO LAST-YR-ATT.
01484      IF LAST-QTR-ATT = '2' THEN
01485      MOVE 'W' TO LAST-QTR-ATT.
01486      IF LAST-QTR-ATT = '3' THEN
01487      MOVE 'S' TO LAST-QTR-ATT.
01488      IF LAST-QTR-ATT = '4' THEN
01489      MOVE 'U' TO LAST-QTR-ATT.
01490      IF MARITAL-STATUS OF NAME-LINE = '1' THEN
01491      MOVE 'S' TO MARITAL-STATUS OF NAME-LINE.
01492      IF MARITAL-STATUS OF NAME-LINE = '2' THEN
01493      MOVE 'M' TO MARITAL-STATUS OF NAME-LINE.
01494      IF MARITAL-STATUS OF NAME-LINE = '3' THEN
01495      MOVE 'U' TO MARITAL-STATUS OF NAME-LINE.
01496      WRITE PRINT-LINE FROM NAME-LINE AFTER POSITIONING 2 LINES.
01497      MOVE CORR STUD-DB-REC TO ADDR-LINE.
01498      WRITE PRINT-LINE FROM ADDR-LINE AFTER POSITIONING 1 LINES.

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01499      MOVE CORR STUD-DB-REC TO ADDR-PARENT-LINE.  
01500      WRITE PRINT-LINE FROM ADDR-PARENT-LINE AFTER POSITIONING  
01501          1 LINES.  
01502      MOVE CORR STUD-DB-REC TO FTU-ATTN-LINE.  
01503      WRITE PRINT-LINE FROM FTU-ATTN-LINE AFTER POSITIONING  
01504          1 LINES.  
01505      END-OF-PRINT-RTN-SECTION.
```

\*STATISTICS\* SOURCE RECORDS = 1505 DATA DIVISION STATEMENTS = 503 PROCEDURE  
 \*OPTIONS IN EFFECT\* SIZE = 120832 BUF = 12496 LINECNT = 57 SPACE1, FLAG, SEQ.  
 \*OPTIONS IN EFFECT\* NODMAP, NOPMAP, NOCLIST, SUPMAP, NOXREF, NOSXREF, LOAD, NODECK  
 \*OPTIONS IN EFFECT\* NOTERM, NONUM, NOBATCH, NONAME, COMPILE=01, NOSTATE, NORESIDENT, N  
 OPTIMIZE, NOSYMDMP, NOTEST, NOVERB, ZWR, SYST, NOENDJOB

---CFRDC-HASP JOB STATISTICS---  
 TIMES -- 2.07 MINUTES ELAPSED 29.44 SECONDS CPU 8.32 SECONDS I/O \$16  
 UR -- 1,512 CARDS READ 0 CARDS PUNCHED 1,580 LINES PRINTED  
 IO/CORE -- 416 DISK EXCPS 0 TAPE EXCPS 120K REQUESTED

## H A S P S Y S T E M L O G

\$ 20.42.19 JOB 174 -- COMP698P --I5 C R  
 N 20.44.23 JOB 174 END EXECUTION.

//COMP698P JOB (1770,3386,\$\$\$\$FTU,45,30,20,,,7),'ROGER SIFRIT', X JOB 174  
 // CLASS=B,MSGLEVEL=(1,1)

\*\*\*JOBPARMPSS=NO  
 // EXEC COBUC,PARM=FLAG  
 XXCOR4C PROC LIB1='USF.SS.COPYLIB',LIB2='SYS2.NPDSSRCE', 00000100  
 XX UN1=,UN2=,VL1=,VL2= 00000200

\*\*\* ALIAS NAME = 00000300  
 \*\*\* DATE LAST MODIFIED = 12/23/75 = RSP 00000400

XXCOR EXEC PGM=IKFCRL00,PARM=NOLOAD 00000500  
 XXSTEPLIB DD DSN=SYS1.PPLINK,DISP=SHR 00000600

//COR.SYSIN DD \*  
 X/SYSIN DD DSN=SSOURCE,DISP=(OLD,DELETE) 00000700

XXSYSLIB DD DSN=LIB1,DISP=SHR,UNIT=UN1,VOL=VL1 00000800

IEF653I SUBSTITUTION JCL - DSN=USF.SS.COPYLIB,DISP=SHR,UNIT=,VOL=

XX DD DSN=LIB2,DISP=SHR,UNIT=UN2,VOL=VL2 00000900

IEF653I SUBSTITUTION JCL - DSN=SYS2.NPDSSRCE,DISP=SHR,UNIT=,VOL=

XXSYSLIN DD DSN=SSLOADSET,DISP=(MOD,PASS), 00001000

XX UNIT=SYSDA,SPACE=(CYL,(1,1)),DCB=(RECFM=FB,BLKSIZE=800) 00001100

XXSYSPRINT DD SYSOUT=A 00001200

XXSYSPUNCH DD DUMMY,SYSOUT= 00001300

XXSYSLIB DD UNIT=SYSDA,SPACE=(CYL,(2,1)) 00001400

XXSYSLIB DD UNIT=SYSDA,SPACE=(CYL,(2,1)) 00001500

XXSYSLIB DD UNIT=SYSDA,SPACE=(CYL,(2,1)) 00001600

XXSYSLIB DD UNIT=SYSDA,SPACE=(CYL,(2,1)) 00001700

XXSYSLIB DD UNIT=SYSDA,SPACE=(CYL,(2,1),RLSE),DISP=(MOD,PASS) 00001800

\*\*\* PROJ 0030 CFRDC SYSTEMS PROGRAMMING 00001900

\*\*\*\*\* ALLOCATION FOR COMP698P. COR (STEP 001) \*\*\*\*\*  
 STEPLIB 350 3330 DISK SYSLNK SYS1.PPLINK  
 SYSLIB 403 2540 RDR SYS76155.T204220.RV151.COMP698P.R0000001  
 SYSLIB 354 3330 DISK USF PK2 USF.SS.COPYLIB  
 150 3330 DISK SYSIPL SYS2.NPDSSRCE  
 SYSLIN 351 3330 DISK SYSWK2 SYS76155.T204220.RV151.COMP698P.LOADSET  
 SYSPRINT 430 1403 PRT SYS76155.T204220.RV151.COMP698P.R0000002  
 SYSPUNCH DUMMY NULLFILE  
 SYSLIB 351 3330 DISK SYSWK2 SYS76155.T204220.RV151.COMP698P.R0000003  
 SYSLIB 151 3330 DISK SYSWK1 SYS76155.T204220.RV151.COMP698P.R0000004  
 SYSLIB 151 3330 DISK SYSWK1 SYS76155.T204220.RV151.COMP698P.R0000005  
 SYSLIB 351 3330 DISK SYSWK2 SYS76155.T204220.RV151.COMP698P.R0000006  
 SYSLIB 351 3330 DISK SYSWK2 SYS76155.T204220.RV151.COMP698P.R0000007



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